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A CLASSIFIED LIST OF PROJECTS

CARRIED ON BY

THE AGRICULTURAL EXPERIMENT STATIONS

1920

UNITED STATES DEPARTMENT OF AGRICULTURE
STATES RELATIONS SERVICE
OFFICE OF EXPERIMENT STATIONS.

A CLASSIFIED LIST OF PROJECTS CARRIED ON BY THE AGRICULTURAL
EXPERIMENT STATIONS, 1920.

The following project list is a revision of the list for 1919, based on information supplied by the individual stations. It brings the active list quite closely up to the end of the calendar year 1920.

The classification follows that in the preceding list. Attempt has been made to secure somewhat fuller information, which will make the titles to a larger degree self explanatory. The assembling and classifying of this large number of titles is the work of Dr. E. R. Flint, of this Office, and its completeness and accuracy are due to his painstaking care. The task was no small one, as may be judged from the fact that more than 4,200 separate projects are involved, covering every conceivable topic in the range of agricultural inquiry.

The total number of projects submitted was 4,219, of which 155 were from the insular stations, but as many of these include lines of work that should be classified under more than one head the total number of entries in this classified list is 4,853, with necessary cross references. Duplication of entry has been avoided as far as possible by following certain rules which may be illustrated by an example. Thus, if a project deals with pruning studies in general without specifying any particular crop, it is placed under the head of Horticulture- Pruning. If, however, it applies to the apple it is placed under that fruit. A cross-reference under the general title of Pruning to specific fruits serves as a connecting link. Similarly, if a project relates to the codling moth in general it is placed under that

head, but if it is a study of the codling moth on the apple it is placed under the host in Economic entomology. Attention is called in all such cases, however, to other headings to be consulted.

A study of the distribution of these 4,853 entries shows that the largest number is under the head of Field crops, comprising one-fourth of the total. Corn leads the list of crops with 147 projects, Irish potatoes has 96, wheat 80, oats 69, rotations 60, and alfalfa and cotton each 57. Horticultural projects come second, with a total number of 743, under which the leading headings are: Apples 100 entries; fruits, general 60, vegetables and truck crops, general 49; grapes 39, peaches 32, and orchard management 31. The next largest heading is Diseases of plants, with 409 entries, the crops having the largest number being potato diseases 51, tomato diseases 30, and apple diseases 29. This is followed by Economic entomology with 356 projects, the leading subjects being bees 35 entries, apple insects and insecticides 20 each, and the codling moth and corn insects 13 each. The next largest general subject is Soils, with 259 projects, under which the leading sub-heads are soil fertility 52 projects, soil types 29, soil flora 28, and soil surveys 18.

The Animal husbandry group is led by poultry with 191 projects, followed by swine with 147, beef cattle 78, sheep 63, and horses 13. Dairy farming includes 128 projects and Dairy products 80. There are 181 entries under Veterinary medicine, poultry diseases leading with 40 entries.

Other main headings in the order of number of projects are Fertilizers 141, Rural engineering and Rural economics 128 each, Feeding stuffs and animal nutrition 122, Genetics 97, Botany 90, Chemistry 69, and Foods and human nutrition 57. The smallest number of entries is under Meteorology with 7 projects.

The total number of projects carried on by the State stations (excluding the insular stations) is 4,064, of which 3,479 are on the Hatch or other funds and 555 on the Adams funds. The average number of projects for the State stations is 81, with 70 under the Hatch and other funds and 11 under the Adams fund. Grouping the State station projects under more general headings we find 1,468 in agronomy, 639 in horticulture, 587 in animal husbandry, 344 in diseases of plants, 340 in entomology, 199 in dairying, 164 in veterinary medicine, and 322 miscellaneous, including all other subjects.

E. W. ALLEN,

Chief,

Office of Experiment Stations.

Washington, D. C., June 1, 1921.

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CHEMISTRY.

Chemical studies, various.

Microscopical and chemical study of proximate constituents of plants, their metabolism and translocation, with special reference to influence of plant food ingredients. R.I.

Chemistry and metabolism of plants by varying degrees of vegetation and reproduction. N.H.

The determination and significance of the amino-acid resulting from the hydrolysis of the proteins contained in seeds, grains, grasses, feeds, and foods. Ky.

The biochemistry of disease resistance in plants. Minn.

Influence of climatic factors on the chemical composition of plants. Wis.

Identification of acids of plant products. Ark.

The chemical analysis of forage crops and feeding stuffs. Wyo.

Protein investigations. [Amino acids and humin formation.] Minn.

Composition, constitution, and properties of proteid bodies, especially those of ripe seed and their relative efficiency in nutrition. Conn. State.

A study of the proteins of the pecan to find the per cents of proteins extracted by the solvents commonly used. Okla.

A study of the proteins of peanuts, cottonseed, hemp, kafir, and alfalfa. Okla.

A study of the protein of maple seed and the protein and phosphorus compounds of pollen. N.Y. State.

The isolation and study of pure proteins from forage crops. (Work on alfalfa seed, alfalfa hay, and clover hay.) Oreg.

Nature and inheritance of chemical constituents of certain vegetable oils. Wis.

Chemical tests of oats, corn, and rye. Minn.

Ash and silica content of grain straw. Minn.

Tests (chemical) of quality of strains of wheat from the plant breeding nursery. Minn.

Tests (chemical) of quality of disease resistant hybrid wheats. Minn.

Tests (chemical) of quality of varieties of wheat grown by the section of field crops. Minn.

Soluble proteids of wheat. Mont.

A study of the total and water soluble calcium and magnesium content of flours from strong to weak wheats. N. Dak.

Analyses and tests of flour. Minn.

Chemical studies, various. (Cont.)

- Analysis (chemical) of corn for selection of high and low protein strains. Minn.
- Chemical factors concerned in the formation of pigments in certain varieties of corn. Nebr.
- Changes taking place in corn and corn meal when stored under different conditions. Ky.
- Chemical changes which take place in cottonseed during growth and factors affecting same. Okla.
- Chemical factors involved in the assimilation of atmospheric nitrogen by legumes. P.R.
- Investigation into the form of nitrogen in the nodules of legumes. Tenn.
- Chemical composition of clover. Mont.
- Chemical study of the grain sorghums. Okla.
- A chemical study of the velvet bean. Ala.
- Sugar content and purity of sugar beets. Minn.
- Chemical composition of silage crops. Minn.
- Chemical studies of silage.--Influence of fermentation on the starch content of experimental silage. Iowa.
- The composition and properties of silage prepared from the grain sorghum. Okla.
- A study of the chemical composition of fruits during development under varying conditions of treatment. Del.
- Chemical determinations of acidity in apples (in connection with breeding work). Idaho.
- A chemical study of the process of ripening in the prune, with special relation to improvement of methods of drying. Wash.
- Vinegar investigations. Iowa.
- Study of the chemistry of arsenical insecticides. Mass.
- A study of the basicity of casein. N.Y. State.
- Analyses of butter, buttermilk, and skim milk. Minn.
- Study of the chemistry of butter fat and the effect of food in modifying its chemical and physical character. Mass.
- Study of carbonic acid in milk as a basis for distinguishing heated from unheated milk. N.Y. State.

Chemical studies, various (Cont.)

Chemical studies of dairy wastes. N.Y. Cornell.

A chemical study of the nutrition of calves. Ind.

Horse fat investigations to determine the chemical and physical constants and to investigate the constituents of horse fat. N.Dak.

Vegetation and soils from vicinity of smelters. Minn.

A study of the character of the water and soils of Arizona by means of samples submitted by citizens. Ariz.

The chemical analysis of soils from the experiment farm at Sheridan.--To find the per cent of all the soil constituents at three depths (surface, intermediate subsoil, and deep subsoil) at five year intervals. Wyo.

Analysis of the agricultural soils of the State. Ky.

Analysis of soil samples (in connection with soil survey work). Idaho.

Collection of composite samples of all soil types and chemical analyses of soils in Jackson County, Oreg. (Talent Branch Station) Oreg.

The effect of pressure on enzymes. W.Va.

Methods.

A study on the nature of soil acidity and methods for its determination. Ill.

The development of the calcium acetate method of determining so-called soil acidity. The development of a simple means of determining soil organic matter content; the nature of so-called soil acidity in Vermont soils. Vt.

A study of the determination of moisture in soils and agricultural materials and the nature of the decomposition products given off. S.C.

Methods of determining boron when applied to mixed fertilizers and working out modifications that would be adapted to these materials. Maine.

The use of solutions of ammonium citrate for the estimation of reverted calcium phosphate. Mich.

A study of methods of determining caffeine. Conn. State.

Use of the apparatus for electrometric hydrogen ion determination as applied to milk and milk products. N.Y. Cornell.

Detection of butter fat adulterants.--To develop methods for detecting, and approximate quantitative estimation of butter fat adulterants. Ind.

Poisonous plants. (See also Botany and Veterinary medicine.)

Chemical study of the toxic principles of Aconitum columbianum. Wyo.

Chemical study of the toxic principles of Delphinium menziesii. Wyo.

Preliminary examination of Glaux maritima. Wyo.

Preliminary examination of Triglochin maritima. Wyo.

Chemical study of the toxic principles of the seeds and fruits of Lupinus argenteus. Wyo.

The toxicology of cottonseed and their products.--The determination of the cause of the injury frequently resulting when cottonseed meal is fed to swine and the elimination of this cause of injury. N.C.

METEOROLOGY.

Miscellaneous.

General weather observations. Mass.

Weather observations to assist in the interpretation of the field investigations. Ill.

Weather observations with special attention to frost protection. (Cranberry Station Mass.

Meteorological data, including evaporation, precipitation, wind velocity, daily temperatures (maximum and minimum) and humidity. (Rice Experiment Station Crowley) La.

The relation of the climate of New York to the agricultural industries of the State. N. Y. Cornell.

Studies in evaporation. N.Y. Cornell.

Areas in which immunity from early and late frosts may be expected and the consequent effect on selection of crops. Mass.

BACTERIOLOGY.

(See also Soils, Field crops-legumes, and Dairy products.)

Miscellaneous.

Relation of parasitic fungi and bacteria to their host plants. Va.

A study of the possibilities of utilizing protein synthesis by microorganisms, in converting common waste products of Kansas crops into valuable feed materials. Kans.

Bacteriology, miscellaneous (Cont.)

Fermentation of certain carbohydrates with the isolation and utilization of the fermentation products. Iowa.

Resistance of legume bacteria to freezing temperatures. Wis.

Studies of nodule forming bacteria. Mich.

Nodule organism of alfalfa and its relation to those of sweet and red clover. Ky.

Studies of pentose fermenting bacteria. Wis.

Acetic acid bacteria. Iowa.

Microorganisms in the fermentation of silage. Iowa.

Studies of various fermentations. Mich.

A study of the organisms of sweetened condensed milk. N.Y. Cornell.

Studies of Bacillus botulinus. Wis.

Bacteriological investigations on foodstuffs. Mich.

Bacteriological investigations on drinking water supplies. Mich.

BOTANY.

Anatomical studies

Anatomy of the Ranalian flower. N.Y. Cornell.

Floral anatomy of the Salicaceae. N.Y. Cornell.

Floral anatomy of the Urticaceae. N.Y. Cornell.

Nitrogen assimilation. (See also Field crops-legume inoculation)

Chemical factors involved in the assimilation of atmospheric nitrogen by legumes.
P.R.

Accumulation and utilization of atmospheric nitrogen. N.J.

The relation of nitrates to nodule formation. Idaho.

Nodule organism of alfalfa and its relation to those of sweet and red clover. Ky.

Studies of nodule forming bacteria. Mich.

Effect of inoculation of soy bean seed on nitrogen content of plants. Wis.

Plant introduction.

Plant introduction. Tex.

Foreign plant introductions. Penn.

Plant introduction work.--Testing out newly introduced plants. Fla.

Seed and plant distribution, to encourage more general and more diversified plantings, provide good seeds and plants which can not be obtained elsewhere on the island. Guam.

Tests of new and imported species of plants. Acclimatization tests, including teff grass, Kikuyu grass, Sudan grass, teosinte, pearl millet, etc. Ga.

Seed and plant accession. Calif.

Plant nutrition. (See also Fertilizers.)

Organic nutrition of plants. [Role of fructose and glucose and their translocation]. N.Y. Cornell.

Effects of deficiencies in nutrition upon the physiological functions of crop plants. Mich.

Studies of plant nutrition with reference to physiological diseases. Fla.

Plant nutrition and its relation to parasitism, involving a study of the causes and relationship of attack and mode or causes of resistance to attack of parasitic fungi in flax, cereals, and associated crops. N.Dak.

Chemistry and metabolism of plants under varying degrees of vegetation and reproduction. N.H.

Microscopical and chemical study of proximate constituents of plants, their metabolism, and translocation, with special reference to influence of plant food ingredients. R.I.

Metabolism studies with sweet corn. Md.

Studies on the catalase activities of fruit tree tissues. N.Y. Cornell.

Function of fructose and glucose in plants. N.Y. Cornell.

Functions of nitrogen, potash, and phosphoric acid in the production of the peach. Del.

Study of the relation of the concentration of nutrient solutions to the growth of the barley plant in sand and water cultures. The relation of solution to absorption and forms of combination of important elements. Calif.

Absorption of solutes by plants with special reference to balanced solutions. Mich.

Study by means of water and pot culture, of the physiological effect and relationship of nutrient elements upon plant growth. R.I.

Plant nutrition. (Cont.)

Investigation of the food requirements of plants growing in sand or in soil cultures. Md.

A study of soils and fertilizers in relation to plant growth and development. Fla.

The relation of soil moisture and of the moisture content of sand cultures to balanced fertilizer rations and to the physiological value of nutrient mixtures for plants. N.J.

The translocation of the mineral matter in plants. Ky.

The salt requirements of representative agricultural plants. N.J.

Study of plants in relation to their comparative requirements for lime and magnesia and physiological or other reasons for variation therein. R.I.

Status of silicon and need of silicon for plant growth. Wis.

Occurrence and distribution of manganese in plants. Ky.

The relative availability and efficiency of various soluble and insoluble iron compounds in relation to plant production. N.J.

Function of sulphur as a plant food. Wash.

Influence of form and amount of sulphur on growth and development of seed and of sulphur loving plants. Wis.

The relation of sulphur and sulphur compounds to cell structure. Md.

Magnesium and sulphur nutrition of plants. Ark.

Studies on the nutrition of plants as affected by nitrogen and sulphur and by salts. Calif.

Poisonous plants. (See also Chemistry and Veterinary medicine.)

Poisonous range plants. Nev.

Poison plants of our grazing ranges. Ariz.

Poisonous plant investigations.--Surveys of the State to determine the plants causing most serious losses of stock, their distribution, the extent of losses, conditions under which losses usually occur and methods of preventing losses as far as possible. Oreg.

Microscopy of poisonous plants. Colo.

The toxic properties of the rayless goldenrod. Ariz.

Botany, miscellaneous.

Rudbeckia laciniata in North America. N.Y. Cornell.

Bromus ciliatus, B. secalinus. and their allies in North America. N.Y. Cornell.

North American species of oxalis. N.Y. Cornell.

Aster paniculatus and its allies in North America. N.Y. Cornell.

A catalog and manual of the flora of the Cayuga Lake Basin. N.Y. Cornell.

Conditions of parasitism in maize. N.Y. Cornell.

Fungi of Arkansas. Ark.

Variation of fungi as a result of environment. Me.

Biologic specialization of parasitic fungi in relation to disease resistance in plants. Colo.

Life history and relations of imperfect fungi to soil and seed in wheat cropping. N.Dak.

The relation of microspores, "Spermatia" to life history and propagation of certain ascomycetes. Ga.

Variation of plants by growing them for successive generations in soil treated with large amounts of plant food. Md.

Water requirements of crops as related to plant characters and environmental factors. Nebr.

The tolerance of plants to acid conditions. Del.

Tolerance of crops for alkali. Idaho.

Physiological reaction of plants to light intensity and moisture in relation to burning of foliage by sprays and fumigants. Mass.

Study of the effect of ultra violet light on plant growth. Mass.

Relations of the morphology and physiology of plants to drought resistance. Kans.

Chemical and physical behavior of potatoes in the ground after death of vines. Md.

The extent to which the weed factor will affect the transpiration of wheat and oats. Iowa.

The controlling influence of carbon dioxid on metabolism in storage organs [with potatoes]. Md.

Study with peaches on change of permeability and its relation to availability. Del.

Botany, miscellaneous. (Cont.)

Physiological effects of available plant food upon length of the crop growing season. Vt.

Researches on conduction in plants. N.Y. Cornell.

A study of the correlations between certain physical characteristics of plants and their capacity to yield. S.Dak.

Growth correlation in plants and inhibition of growth. N.Y. Cornell.

Determination of a temperature law in crop production. Tenn.

Factors influencing the oil content of seeds [Cotton]. S.C.

A study of the protein of maple seed and the protein and phosphorus compounds of pollen. N.Y. State.

Borax injury. Its effect on plant growth. Maine.

Pollen viability. N.Y. Cornell.

The effect of digestive fluids on spore viability.--The determination of the question whether or not spore of fungi (smuts, etc.) will survive passage through the alimentary canal. Vt.

Enzymatic activity as a limiting factor in production. Del.

Relation of enzymes to yeast activity. Wis.

Enzym production and fixation. N.Y. Cornell.

Reactions of enzymes to solutions within the plant. Del.

Investigations on native plants, weeds and fungi- seed analysis and crop inspection. To provide for experiments and investigations upon weeds, seeds, and fungus pests and to make provisions for carrying out the investigational features of the Pure Seed Law; to provide measures for weed control and for investigation of the possible value of certain economic native plants; and to provide whereby purchasers and users of seed may gain reliable information relative to the quality, purity, and variety so that they may protect themselves against loss through weak, diseased, or otherwise worthless seeds, and to arrange for seed and field crop inspection preparatory to standardization and certification and listing of seeds as provided in the State Pure Seed Law. N.Dak.

Biological survey.--To make a survey of and collect biological and economic data upon native and introduced plants and animals of the State, their distribution, habits, and agricultural importance. N.Dak.

Identification laboratory, to identify samples of weeds, poisonous plants, ornamentals, trees, wild plants, mushrooms and diagnose plant diseases. Md.

GENETICS.

For improvement of crops and animals for specific purposes, see also Breeding, under different classes of crops and animals.

Miscellaneous.

Studies in heredity. Ky.

Studies of heredity by the statistical method. Ill.

Inheritance of contrasted characters. Miss.

Methods in selection breeding. Colo.

Study of the laws of inheritance through hybridization. N.Y. Cornell.

Studies on chromosome reduction. N.Y. Cornell.

Minor breeding investigations. Calif.

Investigation of the possibility of sex control. Wis.

The effects of continued inbreeding. Wis.

Study of the correlation of characters and of inheritance in pure lines and varieties. Mont.

The possibility of the establishment of a pure line among open pollinated plants. Vt.

Analysis of cellular structure of hybrids. Maine.

The plant breeding value of mutation and other types of variation in wild and cultivated plants. N.Y. Cornell.

Nature and inheritance of chemical constituents of certain vegetable oils. Wis.

The origin, nature and inheritance of apparent mutations in certain plants (Riverside). Calif.

Investigation of inheritance of disease resistance in plants. Wis.

Alfalfa- inheritance of hardiness.--To obtain data as to the genetics of hardiness in alfalfa and thereby to lay a foundation for future practical breeding operations. N.Dak.

Correlation of characters in grain. Colo.

Inheritance study in cereals. Wash.

Inheritance studies with small grains. Minn.

Genetic principles as applied to corn improvement.--To improve the quantity and quality of field crops, by the Mendelian analysis of characters. Ill.

Studies of inheritance in corn, particularly as applied to inbreeding. Wis.

Chromosome numbers in corn and development of embryo sac. N.Y. Cornell.

Mendelian studies with corn. N.Y. Cornell.

Development of chondriosomes in relation to plastid inheritance in corn.
N.Y. Cornell.

Xenia in maize and hereditary transmission of various characters. Conn.State.

Inheritance of barrenness in corn. S.C.

The genotypic constitution of certain varieties of cotton. N.C.

Fundamental study of inheritance in cotton. Tex.

A study of the inheritance of fruit characters in cotton. Ark.

Mode of inheritance and association of economic qualities in cotton. N.C.

Mendelian studies with flax. N.Y. Cornell

A study of inheritance of black hulled white kafir. Okla.

Inheritance in oats. S.C.

Oats experiments.--Inheritance studies. Maine.

Mendelian studies with oats. N.Y. Cornell.

A study of the problems of inheritance of character in tobacco. Calif.

Sterility of hybrids in Nicotiana. Pa.

Inheritance of stem rust resistance of wheat. N. Dak.

The possibility of the inheritance of variations induced by differences in
nutrition in wheat. N.Y. Cornell.

Mendelian studies with wheat. N.Y. Cornell.

Breeding for hardiness. Minn.

Inheritance of fruit characters. Minn.

Inheritance of characters in tree, vine, and bush fruits. N. Y. State.

Breeding work with apples, for the purpose of studying the laws of inheritance
in apples and of producing new types of fruit. Studies on self-sterility
experiments on the mutual influence of stock and scion. (Highmoor Farm)
Maine.

Apple experiments.--Study of heredity in apple crosses. Maine.

A study of Xenia in apples and of the factors which influence the fertility
and sterility of apple varieties. Ark.

Genetics, miscellaneous. (Cont.)

Principles relating to transmission of characters in the apple as affected by selection and by crossing. Ill.

Bean experiments.--Color and pattern inheritance. Maine.

Mendelism in the hybrids of blackberries and raspberries, particularly with reference to leaf structure and habits of growth. Wash.

Study of heredity of cabbage as applied to head characters. Del.

Mendelian studies with Aquilegia. N.Y. Cornell.

Study in the origin of species or the development and improvement by hybridization in the genera Viola and Rubus. Vt.

Inheritance of flower color and flower form in Phlox drummondii and of flower color in Maratilis jalapa. Penn.

Genetics of Crepis virens, the smooth hawk-beard. Calif.

Inheritance of alkaloidal content and other characters in Datura. Wis.

Transmissibility and degree of permanence of vegetative variations of the vine. Calif.

Hereditary studies of Vitis rotundifolia. Ga.

Inheritance of color in Rotundifolia grapes.--To determine the laws governing inheritance of color in Vitis rotundifolia. N.C.

Inheritance of size of fruits in Rotundifolia grapes.--To determine the factors governing the size of berries in Vitis rotundifolia and method of transmission of the character. N.C.

Studies in the inheritance of sex in Rotundifolia grapes.--To establish the laws of transmission of sex applying to Vitis rotundifolia and to determine methods to be used in hybridization. N.C.

Hybridization of Rotundifolia grapes with other species.--To determine the various species with which Vitis rotundifolia will hybridize: To find methods of overcoming antipathy where it occurs, and to establish a scale of hybridization of Vitis rotundifolia with other species. N.C.

Inheritance of productivity of Rotundifolia grapes.--To establish standards of productivity for the most important varieties, to study the factors bearing upon productivity in order to determine methods to pursue in increasing productivity in Vitis rotundifolia and to watch for unusually productive vines. N.C.

The genetic composition of peaches. Mass.

Study of certain factors in heredity of the peach. Del.

Crossbreeding peaches with reference to improved fruits, improved root-stocks, and study of inheritance in Amygdalus. Calif.

Genetics, miscellaneous. (Cont.)

Peach breeding experiments, to improve the present list of commercial varieties and to study the inheritance of unit characters in the peach. N.J.

A study of inheritance in the tomato. Penn.

Studies of heredity in vegetables, especially tomatoes and squashes. N.H.

Determination of independence or coupling in unit characters of a mammal. Ill.

Skunk breeding. Ill.

Studies of inheritance in Orthoptera. Kans.

The effect of temperature and moisture conditions on inheritance in Orthoptera. Kans.

Investigations in Mendelian inheritance in domestic animals. Mo.

Experimental analysis of the heredity factors determining milk and meat production in cattle. Wis.

The transmission of sex in dairy cattle. Ill.

Inheritance in dairy cattle.--To study the inheritance of those characters which are directly and indirectly connected with milk production. Ill.

Effects of in- and -in breeding of dairy cattle and swine. Del.

Establishing a breed of sheep for winter lambing and a study of inheritance of characters. Okla.

A study of the inheritance of wool production. Ohio.

Transmission of syndactylism in swine. Ill.

Heredity studies with swine. Iowa.

Poultry experiments.--Experimental modification of the hereditary process through the action of internal secretion. Maine.

Effect of cumulative selection on external characters (with poultry). N.Y. Cornell.

Inheritance of fecundity (in poultry). N.Y. Cornell.

Relative influence of sire and dam in the transmission of egg laying qualities. Oreg.

Study of laws governing the breeding of domestic birds. R.I.

Studies of inheritance in pigeons. Wis.

Sex linked inheritance in poultry. Mo.

Studies of inheritance of blue in Andalusian chickens. Kans.

Inheritance in cock type. N.Y. Cornell.

Genetics, miscellaneous. (Cont.)

Hereditary factors as possible causes of in-shell deaths and subsequent low hatchability of hens eggs, and effects of single factors and their transmission in inheritance. Conn. Storrs.

A determination of the mode of inheritance of various characters of poultry and a study of other factors governing form and function. Breeding for increased egg production; the relation between the primary sexual organs (testes and ovary) and the remainder of the organism; study of the hatching quality of eggs from the statistical and genetic standpoint. Mass.

Inheritance of high egg production. Oreg.

Poultry experiments.--Study of Mendelian inheritance and linkage of egg production and feather color. Maine.

Inheritance in egg production.--Data on maturity as indicating productive ability, inheritance of size and color of eggs and similar characters. Nebr.

To study the behavior of egg shell color in inheritance. N.J.

SOILS.

General soil studies.

Soil experiment fields. Ky.

Systematic study of Michigan's soils. Mich.

The abnormality of soils in cylinder and lysimeter experiments. Tenn.

Soil studies, especially regarding conditions and properties of phosphoric acid, potash, and humus, and the nitrifying and other biological properties of soil. Tex.

Acidity, soil reaction, liming. (See also Fertilizers- lime)

Soil acidity. R.I.

Soil acidity studies, to throw more light upon the various phases of soil acidity, its nature, its kinds in different types of soil, its effect upon various crops, the effect of various fertilizers and soil treatments upon soil acidity. Ind.

Study of the nature and intensity of soil acidity. W. Va.

Soil acidity tests and lime trials. Oreg.

Lime requirements of an acid soil. To compare the value of different forms of lime. Md.

Lime absorption and acidity. Mass.

The soil acidity relations of soil, higher plants, and bacteria. Wis.

Acidity, soil reaction, liming. (Cont.)

A study on the nature of soil acidity and methods for its determination. Ill.

Study of physical-chemical aspects of soil acidity. Mich.

A study of the soluble manganese as one cause of the toxicity of acid soils and means of decreasing its injury to crop plants. Ala.

Effect of soil acidity on bacteria associated with the nitrogen cycle. Wis.

The liming of Oregon soils. Oreg.

Study of soil lime requirements. The nature of so-called soil acidity in Vermont soils. Vt.

Soil acidity.--Determination of lime requirements. Ala.

Lime requirement on Thompson farm. Penn.

Study of acid soils in Arkansas. Greenhouse experiment with lime, using alfalfa on soils from various counties. Ark.

The tolerance of plants to acid conditions. Del.

Alkali

Modification of tolerance for alkali by concomitant soil conditions. Ariz.

A chemical, biological, and physiological study of alkali in soils in its relation with crop production. Calif.

Action of soil alkali. Utah.

Alkali and plant food under irrigation and drainage conditions. N. Mex.

Reclamation of alkaline lands by flooding and tile drainage. Calif.

Soil investigations, to find some method of eliminating the "slick spots". (Caldwell Substation). Idaho.

Irrigated soils investigations. Correction of alkali and "slick spots". (Caldwell Substation). Idaho.

Effects of liming and study of rate of liming. Ala.

Tolerance of crops for alkali. Idaho.

Composition of soils.

The composition of soil types. Tex.

A comparison of the total calcium content of cultivated and virgin soils, with particular reference to the possible limitation of crop production by deficiency of this element. Ky.

Composition of soils. (Cont.)

A study of the character of the water and soils of Arizona by means of samples submitted by citizens. Ariz.

The chemical analysis of soils from the experiment farm at Sheridan.--To find the per cent of all the soil constituents at three depths (surface, intermediate subsoil, and deep subsoil) at five year intervals. Wyo.

Analysis of the agricultural soils of the State. Ky.

Analysis of soil samples (in connection with soil survey work). Idaho.

Collection of composite samples of all soil types and chemical analyses of soils in Jackson County, Oreg. (Talent Branch Station) Oreg.

Nitrogen assimilation. (See Potany)

Nitrogen fixation.

Studies on nitrogen fixation. Calif.

Nitrogen fixation by legumes. N.Y. Cornell.

Studies on the fixation of nitrogen by green plants. N.Y. Cornell.

Influence of electrical stimulation on nitrogen fixation. Mass.

Symbiotic nitrogen fixation, to maintain and possibly increase the nitrogen content of Illinois soils. Ill.

Bacteriological study of alkali soils in relation to nitrogen fixation. Colo.

Fixation of nitrogen in Colorado soils. Colo.

Nitrogen transformation.

The conditions affecting the physiology of the process of nitrification. Ohio.

Calcium as a factor in nitrification and crop response. Del.

Soil organisms, their functions and their relation to the ammonification of farm manures. N.Y. State.

Ammonification and nitrification studies. Utah.

Organic matter in soils.

Humus investigation. Tenn.

Humus investigations.--The composition and decomposition of organic matter in the soils. Various humus-forming materials are studied. Iowa.

Relation of organic matter (humus) of the soil under different systems of soil management to crop production, with special reference to the changes which take place in the plant food content and the physical condition of the soil. Iowa.

Organic matter in soils. (Cont.)

Organic matter in soils.--Looking to soil improvement by the incorporation of organic matter into the soil in various amounts and in various forms. Ill.

The quantitative relations of organic matter in soils. Ark.

Effect of lime on the decomposition of organic matter in soils. Del.

Maintenance of organic matter, to determine the most practicable means of maintaining and increasing the organic content of Oregon soils. Oreg.

Bacterial decomposition of organic matter. Tenn.

Residual effect of crops. (See similar heading under Field Crops)

Soil erosion and leaching.

Investigation of water penetration, evaporation, run-off and erosion in the case of an average Missouri soil. Missouri.

Prevention of soil washing, to determine practices for the prevention of washing on hilly land. Ill.

Soil fertility. (See also Field crops- Rotations)

Fertilizer plat studies.--Fertility studies on 104 one-tenth acre plats. N.Y. State

Soil fertility investigations in western Washington. Wash.

Permanent fertility studies. (Greenville and Nephi Farms) Utah.

A study of the underlying factors influencing soil fertility as evidenced by the chemical composition of the soil solution. Calif.

A detailed study of the effect of the barley plant on the soil solution. Calif.

To determine the effect, if any, of potash salts on the reaction, nitrate formation, and soluble salt content of soils, also their influence on the growth of wheat seedlings in water. Penn.

Maintenance of soil fertility.--A study of the influence of supplementing manure and crop residues respectively with acid phosphate, ground limestone, and sulphate of potash in various combinations. To determine the best methods of maintaining or increasing the productive capacity of the Fargo clay in the Red River Valley. N. Dak.

Maintenance of soil fertility on the Edgeley loam at the Edgeley Substation, on the Barnes fine sandy loam at the Langdon Substation, and on the Williston silt loam at the Williston Substation. To determine the influence of the use of farm manure and crop residues supplemented with artificial fertilizers under rotation culture. N. Dak.

Soil fertility. (Cont.)

Maintenance of soil fertility.--A study of the effect of reinforcing farm manure with raw rock phosphate in systems of continuous cropping with wheat, corn, oats, and barley; and a five-year rotation consisting of corn, barley, wheat, sweet clover, and flax. To determine the best methods of maintaining or increasing the productive capacity of the Fargo clay. N. Dak.

Maintenance of soil fertility.--A comparison of steamed bone meal, ground raw rock phosphate and acid phosphate as carriers of phosphorus in live stock and grain farming systems. To determine the best methods of maintaining or increasing the productive capacity of the Fargo clay in the Red River Valley. N. Dak.

To test various mixtures of fertilizer salts on different courses in a crop rotation as means of maintaining soil productivity. N.Y. Cornell.

A survey of the potential fertility of West Virginia soils, to determine the potential supplies of plant food, lime and organic matter in the soils of the State. W. Va.

The effect of continuous application of fertilizer on composition of soils. S.C.

The effect of adding lime, calcium sulphate, and sulphur to Idaho types of soils, on the yield of alfalfa and composition of the ash. Also the effect of these chemical substances on the supply of available plant elements. Idaho.

Experiments in soil fertility, including the use of lime, green manure, stable manure, and a study of the effect of nitrogen, potash, and phosphoric acid upon the soil. Del.

A study of soil requirements as to certain constituents, including chiefly the relations of plant to soil in regard to the amounts of sulphur and calcium. N.Y. State.

The relation of sulphur to soil fertility and plant composition. Oreg.

Sulphur in plants and soils and its significance to permanent soil fertility. Ky.

Fertility investigations on the effect of manure, rock phosphate, and commercial fertilizers on soils on certain State farms. Iowa.

The rate of accumulation of nitrogen and carbon in soils under different systems of green manuring and cropping, to determine the effect of different systems of green manuring and cropping upon the accumulation and loss of nitrogen and carbon in the soil. Missouri.

Soil experiment fields, to investigate and demonstrate methods of improving the productiveness of Illinois soils. Ill.

Cooperative demonstration work, assisting the extension division in determining the need of certain soils for fertilizers and soil amendments. Idaho.

Soil investigations to determine the needs of the soils of this area. (Caldwell Substation) Idaho.

Soil fertility. (Cont.)

Maintenance of soil fertility. A comparison of the influence of cropping systems with and without manure in five different four-year rotations four different six-year rotations and one three-year rotation. To determine the best methods of maintaining or increasing the productive capacity of the Fargo clay in the Red River Valley. N. Dak.

Fertility investigations with two-year crop rotation, including the effect of manure and crop residues; the effect of rock phosphate with manure (live stock system); and the effect of rock phosphate with crop residues (grain system). Iowa.

Fertility investigations with three-year crop rotation, including the effect of manure and crop residue; the effect of rock phosphate with crop residues (grain system); and the effect of rock phosphate with manure (live stock system). Iowa.

Fertility investigations with four-year crop rotation, including the effect of various applications of manure and of crop residues; the effect of rock phosphate, bone meal, acid phosphate, potassium salts, and complete commercial fertilizers with manure (live stock system); the effect of the same fertilizers with crop residues (grain system, no manure); the applications of complete commercial fertilizers broadcasted or applied in the hill; and the effect of limestone and air-slaked lime. Iowa.

Fertility investigations with five-year crop rotation, including alfalfa, including the effect of manure and crop residue; the effect of rock phosphate and acid phosphate with manure (live stock system); and the effect of phosphates with crop residues (grain system). Iowa.

Fertility and rotation experiments. Crop rotation for fertility maintenance. (Hermiston Branch Station) Oreg.

The influence of rotations upon the maintenance of soil fertility. S. Dak.

General investigation of the peculiar characteristics of Hawaiian soils and of their relations to fertility. Hawaii.

Source of mineral plant food to obtain information on the most economical sources of plant food for the improvement of soils and the establishment of a permanent system of agriculture. Ill.

Maintenance of soil fertility: A study of the influence of continuous culture as compared with rotation culture. The following crops are grown under continuous culture; wheat, corn, alfalfa, barley, oats, and brome grass. To determine the best methods of maintaining or increasing the productive capacity of the Fargo clay in the Red River Valley. N. Dak.

Effects of certain crops on soil fertility. Plats planted to various crops and combinations of crops, followed by wheat as an indicator of the fertility. Miss.

To ascertain the effect on soil productivity of continuous cropping, when the organic matter of the soil is maintained by means of seeded crops. N.Y. Cornell.

Effect of prolonged production of alfalfa upon soil fertility. Comparison of plant food contents of variously cropped soils. Kans.

Soil fertility. (Cont.)

The value of clover in fertility maintenance. Ohio.

Maintenance of soil fertility by growing legumes with corn and cotton. (South Mississippi Branch Station, Poplarville) Miss.

The effect of the cowpea crop on soil fertility with special regards to a wheat crop and a corn crop following. Tenn.

Timber soil investigations, to investigate the most efficient method of soil improvement by the growth of legumes. (Sandpoint Substation) Idaho.

Investigation of the value, nature, and duration of the residuary effects of vegetable matter when applied to soils of different texture. Mich.

Fertility plats: To measure the residual effects of the previous plat treatments upon the crop yields; to determine the ability of various legumes to adapt themselves to a variety of conditions; and the effect of legumes grown upon the chemical composition and the bacteriological properties of the soils. W. Va.

Fertility investigations with continuous cropping (corn). The effect of manure and lime. Iowa.

Study of the residual effects upon the soil, and of the utilization by rotation crops, of the commercial fertilizers, manure and lime. Penn.

Experiment in maintaining fertility in the garden. N.H.

Soil fertility studies from the standpoint of the vegetable grower. Md.

Soil fertility as influenced by microorganisms in their relation to the presence and disappearance of organic matter. Mass.

Relation of geology and chemistry of soils to productivity and fertilizer requirements. N.C.

Soil fertility studies on different soil types, to determine the plant food deficiencies of soil type and the best fertilizer formula to use for crops grown in that community. N.C.

Soil fertility, to determine what is in certain types of soil, either chemical, physical, biological, or otherwise, which makes them especially adapted to particular crops and underlie their fertilizer requirements. N.C.

An investigation of the changes in the crop-producing power and the physico-chemico biological properties of soils long under cultivation. Mich.

Availability and utilization of plant nutrients in soils under different methods of treatment. N.Y. Cornell.

Soil flora.

The relation between bacterial activity and crop production. Iowa

Factors influencing bacterial activities of the soil. Utah.

Soil flora. (Cont.)

Effects of different soil treatments, long continued, upon bacterial activity in the soil. Missouri.

The modification of soil flora through climatic influences. Calif.

Investigation of the presence, distribution, and constancy of the more common types and species of soil bacteria in soils of different origin. N.J.

Soil bacteriological changes due to different soil treatment. Del.

Relation of biological activities in the soil in crop production as affected by definite agricultural practices. Wash.

Effect of soil acidity on bacteria associated with the nitrogen cycle. Wis.

The effects of fertilizing materials on bacterial action. Iowa.

Effect of green manuring on activity of soil microorganisms. Md.

The soil solution and its role in the life of microorganisms. Mich.

Factors which accelerate or retard the action of microorganisms, particularly as affecting the accumulation of plant foods and of disease-infected or of disease-producing residues in the soil. To determine the relation of certain bacteria and fungi of the soil to cropping methods, their distribution, habits of life and the material upon which they are living, to arrange for the control of conditions for the maximum efficiency of microorganisms, with reference to increasing crop production and for control of those which tend to be destructive. N. Dak.

A study of the changes in the forms of nitrogen in the soil; the chemical and physical conditions which favor these changes. The nature and distribution of the bacteria concerned. N.C.

The relation of microorganisms to the decomposition of organic compounds toxic to the growth of higher plants. Ala.

Soil fertility as influenced by microorganisms in their relation to the presence and disappearance of organic matter. Mass.

Soil organisms, their functions and their relation to the ammonification of farm manures. N.Y. State.

Bacteriological effect of green manures on a typical Mississippi soil. Miss.

Bacterial activity in soil as a function of associative action. Colo.

Soil bacteriological investigations.--The transformation and need of sulphur. Iowa.

Studies on the longevity of B. radiculicola in the soil. Missouri.

Microbiological study of certain Oregon soils having an acid reaction. Oreg.

Bacteriological studies of North Idaho soils. Idaho.

Soil flora. (Cont.)

Azotobacter studies. Ohio.

Some possible sources of energy for Azotobacter. Colo.

A study of the influence of the absolute reaction of the soil solution upon the growth and activity of Azotobacter in soils. Kans.

Soil fungi. N.J.

Soil molds. Iowa.

The occurrence and action of molds in soil. Iowa.

Soil management.

Soil management studies. Mich.

Soil management work, to ascertain how best to manage farm land in the interior. Alaska.

Management of sandy soils. Wis.

Management of marsh soils. Wis.

Management of heavy clay soils. Wis.

A preliminary study of the causes and corrections of persistently unproductive garden soils. Penn.

Conserving the plant food in trucking soils during the winter. Md.

Restoring pasture and meadow on volcanic ash, to introduce tame grasses and clovers as far as practicable to take the place of native grasses destroyed by ash fall. Alaska.

Soil improvement, to building up a new soil from volcanic ash. Alaska.

Tests of certain methods of soil management applied to Ontario loam and Volusia silt loam at different places in the State. N.Y. Cornell.

The effect of drainage, deep tillage, manure, and lime on "push" soils. Iowa.

Effect of dynamiting field subsoils on crops. Ariz.

Crop rotation and soil management experiments on the college farm. Iowa.

Soil experiments to determine physical and chemical properties of Guam soils or soil conditions; and the ultimate improvement of Guam soils. Guam.

Experiments to determine the best systems of soil management for the most important soil types in Missouri, including the need of lime, phosphorus, potash, and nitrogen as well as the return to be secured, the use of green manures, farm manures, in some cases drainage and certain cultural methods. Missouri.

Soil management and fertilizer investigations. The upbuilding of fertility of the more important soil types. Md.

Soil moisture.

Soil moisture studies. Utah.

Soil moisture constants. Utah.

Movement of water in soils. Minn.

Soil moisture and nitrate investigations. (Moro Branch Station) Oreg.

Soil moisture studies in connection with irrigation for different soils and of different crops. Oreg.

The effect of the initial moisture present on movement of water in soil. Ky.

Soil moisture studies under dry farming. Oreg.

Soil moisture investigations as related to problems in dry farming. Wash.

Studying concentration of soil solution and measuring forms of soil water. Mich.

The relation of soil moisture and of the moisture content of sand cultures to balanced fertilizer rations and to the physiological value of nutrient mixtures for plants. N.J.

Relation of soil moisture, structural development, and yield of small grain. Colo.

Moisture, soil, and crop relations. Utah.

Critical soil moisture points. To determine and measure any difference in the wilting point and time of irrigation for different crops and the factors affecting the same. Oreg.

Lysimeter investigations. Percolation for different soils and crops with approximately uniform applications of water. (Hermiston Branch Station) Oreg.

Availability of soil water and methods of conservation for plants, to determine the efficiency of windbreaks in the conservation of water for plants. Okla.

Soil nitrogen.

Soil moisture and nitrate investigations. (Moro Branch Station) Oreg.

Study of conditions which favor the development and control of nitrates in the soil. Mont.

Nitrate production in a soil as affected by the crop and cultivation, to see whether the crop and cultivation cause any effect on the amount of nitrate nitrogen produced in a soil. Missouri.

Nitrates in field soils. Looking towards a means of providing adequate nitrogen for the production of a maximum crop. Ill.

Lysimeter studies.--A study of the nitrate content of soils at different depths and at different times of the year, in covered, partly covered, and open lysimeters, and also in cropped and uncropped ones. Mich.

Soil nitrogen. (Cont.)

Nitration study, to determine the nitration under brome grass sod and to compare it with that under wheat, corn, barley, and peas. N. Dak.

Lysimeter investigations.--Study of nitrogen balance in legume and nonlegume rotations. N.Y. State.

Economical methods of maintaining nitrogen of the soil. To get information leading to a more economical application of fertilizers and management of land. Ill.

To measure the nitrogen balance in soil under alfalfa and timothy grown continuously and under certain crop rotations. N.Y. Cornell.

The changes in the nitrogen content of the soil under various conditions, such as limed, unlimed, fallow and with and without green manure crops, etc. Tenn.

Studies on the nitrogen content of soils as affected by storage. Missouri.

The protein content of wheat and nitrogen content of the soil, when cropped continuously to wheat and when cropped under a definite rotation scheme. Idaho.

Organic nitrogenous compounds of peat soils, the effect of lime on muck and peat soils. Mich.

Soil phosphorus.

Fixation of phosphoric acid by soils. Va.

Phosphorus relations of soils and plants. Wis.

A study of the phosphorus supply of Ohio soils. Ohio.

A study of the soil phosphoric acid. N.H.

Effect of phosphorus in different forms and the influence of sulphur and calcium sulphate on its availability in normal South Dakota soils. S. Dak.

Soil physics.

Relation of soil temperature to soil parasites and other organisms, including cabbage yellows, flax wilt, tomato wilt, potato Rhizoctonia, legume tubercles. Wis.

A study of the hourly and daily fluctuations in the temperature of the soil. Records at different depths under bare and cropped surfaces. Md.

Soil potash.

Potassium content in successive strata of different soil types and effects of varying treatments on its availability. Mass.

Studies in possible changes in soil potassium. Ohio.

An investigation of the factors affecting the availability of the potassium compounds of the soil. Md.

Soil potash. (Cont.)

Investigations of the availability of soil potash. Conn. Storrs.

The rendering available of potash in insoluble silicates by the action of soil bacteria. Ky.

The liberation of soil potassium. Penn.

Soil sterilization.

Soil treatment for greenhouse lettuce and tomatoes. To determine the effects of steam sterilization upon greenhouse soil for lettuce and tomatoes. Ill.

The effects of heating soils on germination and plant growth and the development of diseases in heated soils which have become reinfested. Wis.

Tomato wilt diseases and soil sterilization of plant beds and greenhouses. Selection of resistant strains of tomato plants. Ohio.

Soil sulphur.

The transformation and need of sulphur. Iowa.

Sulphur in plants and soils and its significance to permanent soil fertility. Ky.

Influence of lime and magnesia on conservation of soil sulphur. Tenn.

Soil surveys.

Soil survey. Ky., Ohio, Oreg., Tex., Utan.

Soil survey of the State. Md.

Soil survey of the State, to map and establish the boundaries of the different types of soil occurring in the several counties of the State. N.C.

Soil survey. A detailed survey of a designated area each season, as funds will permit. Idaho.

Arkansas soil survey. Ark.

Soil survey of Brawley area. Calif.

Soil survey of Grass Valley area. Calif.

Soil survey of Shasta Valley area. Calif.

Soil survey of Willits area. Calif.

Soil survey in Illinois. Ill.

Soil survey of Indiana. To determine and accurately map the various soil types of the State, including the making of chemical analysis and a detailed description of each soil type, together with a discussion of the fundamental methods practiced and the general agricultural adaptation of the particular soil type. Ind.

Soil surveys. (Cont.)

Detailed soil survey of Iowa: The preparation of soil maps of each county, showing the location of all soil types, roads, streams, etc., and of a report describing all soil types, giving results of soil analyses, fertility studies on individual types in the greenhouse and field and recommendations for treatment. Iowa.

Soil survey of Cedar, Adair, Johnson, Wright, Fayette, Woodbury, and Mahaska Counties. Iowa.

The determination and mapping Missouri soil types (soil survey). Missouri.

Soil types.

To ascertain whether the soil type, as now distinguished, is an index to the fertilizer needs of a soil. N.Y. Cornell.

To ascertain whether the composition of a soil type, as now classified, is fairly uniform and characteristic. N.Y. Cornell.

Crops, fertilizers, and cultural treatment for "black sticky land". Oreg.

Crops, fertilizers, and cultural treatment for "white land". Oreg.

The composition and properties of certain soil types and their response to fertilizers, lime, and plant growth. N.Y. Cornell.

An investigation to determine the plant food content and the acidity of each type of soil in each of the counties of Iowa. Iowa.

The effect of lime, rock phosphate, acid phosphate, and commercial fertilizers with manure (live stock system) under common rotations, on seventy fields in various parts of the State on important soil types in surveyed counties, and the effect of the same fertilizing materials with crop residues (grain system) on the same fields. Iowa.

Pot culture studies of the fertilizer requirements of different soil types. Md.

Soil management and fertilizer investigations. The upbuilding of fertility of the more important soil types. Md.

A study of the effect of lime and organic matter on the impervious Kirkland upland soil. Okla.

Field experiments on Volusia soil. To determine the lime and fertilizer requirements. Penn.

Field experiment on Westmoreland soil. To determine the lime and fertilizer requirement. Penn.

Field and pot tests to determine the fertilizer requirements of Dekalb soils. Penn.

Study of the fertilizer and lime requirements of Rutherford County soils. Tenn.

Soil type experiment. To determine the plant food deficiencies of the main types of soil as mapped in the State. N.C.

Soil types. (Cont.)

Pot culture studies with twenty-eight types of Iowa soils. Iowa.

Cropping the drifting sandy soil of southeastern North Dakota. To develop a satisfactory method of handling the sandy soils of the Cheyenne Delta. N.Dak.

The analysis of clay soils of Ontonagon County. Mich.

Studies of the tight clay layer in the soils of the level prairies of Missouri. Missouri.

Fertility investigations on Wisconsin drift soils: The effect of barnyard manure, green manures, bone meal, and potassium salts under a four-year rotation of corn, corn, oats, and clover, and the effect of the same fertilizers on land continuously in corn. Iowa.

Soils of different drift sheets. Minn.

Glacial soils of the gray drifts. Minn.

Coniferous timber soil investigation. Idaho.

Timber soil investigations. (Plots located at Sandpoint Substation) Idaho.

Investigations with fertilizers for muck lands. Mich.

Organic nitrogenous compounds of peat soils, the effect of lime on muck and peat soils. Mich.

Peat soils. Minn.

Study of bacterized peat. Mass.

The effect of lime on muck and peat soils; organic nitrogenous compounds of peat soils. Mich.

Tillage as related to fertility and productivity.

Depth of plowing tests. S. Dak.

Depth of plowing test. To determine the effect on the growth of crops on peat soils by turning the soil at different depths. N.C.

Soil culture. To determine the depth to plow land for the crops involved, i.e., oats, corn, cotton, and alfalfa. Okla.

A comparison of very deep (15 in.) with normal plowing (7 1/2 in.) and both with normal plowing plus subsoiling to the depth of 6 in. in the bottom of furrow. Ohio.

A test of deep and shallow plowing. (Strongsville Test Farm) Ohio.

Improvement of impervious subsoils, including deep plowing, the drainage growing deep rooted crops, subsoiling, and dynamiting. Ill.

Tillage experiments- different methods and time of plowing. (Moro Branch Station). Oreg.

Tillage as related to fertility and productivity. (Cont.)

Tillage experiments, to determine the most advantageous practices in the cultivation of crops. Ill.

Subsoiling test, to determine the effect on the yield of wheat by plowing at different depths and subsoiling. N.C.

A study of the effects of cultivation as compared with merely scraping the soil to keep down weeds, on the soil moisture supply and on the yield of several vegetable crops. N.Y. Cornell.

A study of the effect of stirring soil on moisture content, oxidation, nitrification, and crop yield. S.C.

Field crop investigation under both dry farming and irrigation. Tillage experiments with wheat, oats, barley, rye, field peas, corn, alfalfa, sunflowers, grasses, potatoes, and other minor crops. (Burns Branch Station) Oreg.

Tillage experiments.- Different methods of handling the summer fallow for wheat production. (Moro Branch Station) Oreg.

Studies in crop cultural methods. To determine the best method, rate and distance of planting for various important crops. Ind.

Miscellaneous soil studies.

Solubility effect of ammonium sulphate on the soil. Mass.

Translocation of soluble salts in soils and its relation to amount and manner of application. Mich.

The effect of straw on the soil. Wash.

The immediate and residuary effects of soluble salt on the physical and chemical properties of soils. Mich.

FERTILIZERS.

(See also Soil Fertility and Botany- Plant nutrition)

Fertilizer experiments, general. (See also Field crops- specific crops and Rotations)

Fertilizer and green manure experiments for various truck crops. To determine the profitableness of crimson clover and cowpeas as green manure crops in truck farming, also to study the comparative influence and profitableness of fertilizers in connection with the green manure crops. Tenn.

Experiments with commercial fertilizers. Miss.

Tests with commercial fertilizers. Idaho.

Tests of commercial fertilizers with and without manure. (Astoria Branch Station). Oreg.

Fertilizer experiments. Minn.

Fertilizer experiments. (Burns Branch Station) Oreg.

Fertilizer experiments, general. (Cont.)

Fertilizer experiments on the chief soil types of the State. Oreg.

Field experiments with fertilizers and manures. Ohio.

A critical and statistical study of long-time fertilizer experiments. Calif.

Fertilizer ratio experiment, so-called "triangle experiment". N.J.

The influence of fertilizers on natural vegetation (so-called "half plats") N.J.

Soil amendments. Use of sulphur, lime, and gypsum on leguminous crops. Idaho.

Timber soil investigations, to investigate the value of commercial fertilizers when applied to crops in a rotation. (Sandpoint Substation) Idaho.

General comparative fertilizer tests on the various soil types in South Carolina conducted in cooperation with farmers. S.C.

Tests of crop rotations, commercial fertilizers, and manure. Kans.

Fertilizer experiment to determine the kind and amount of fertilizer most profitable on different soils, using rotations common to each section. N.C.

To determine the relative merits of several different crop rotations and to compare different systems of fertilization, including commercial fertilizers and farm manures. Ind.

Rotation and fertility investigations. (Sandpoint Substation) Idaho.

Rotations and fertility tests (Greenville) Utah.

Crop rotation and fertilizer experiments. Nebr.

Fertilizer experiments with truck crops in a three-year rotation on yellow silt loam in Union County. To determine a rational soil treatment for truck crops in southern Illinois. Ill.

Fertilizer experiments with vegetables. To determine a method of producing satisfactory crops of vegetables on brown silt loam through a series of years without the use of stable manure. Ill.

Commercial fertilizers for major crops. (Hermiston Branch Station) Oreg.

Fertilizer and lime tests in a rotation of cotton and corn. Ga.

Fertilizer, rotation, and soil improvement investigations. Tex.

A rotation comparing heavy applications of phosphoric acid, potash, and nitrogenous fertilizers with moderate amounts of these plant foods for cotton, corn, oats, and legumes grown in rotation. Ala.

Fertilizer- rotation experiments. Ala.

Combination fertilizer and rotation experiments. Ark.

General comparative fertilizer tests. S.C.

Fertilizer experiments, general. (Cont.)

General comparative fertilizer tests at the Pee Dee Station, with corn, cotton, and small grain. S.C.

General comparative fertilizer tests at the Coast Station, with corn, cotton, and small grain. S.C.

The effect of fertilizer treatment on composition of the crop, with particular reference to the effect of concentration and the rate at which the fertilizer is supplied. P.R.

Soil test experiment, to show what ingredients are most beneficial for each crop and the relative amounts of each ingredient necessary for a balanced fertilizer. (Aroostook Farm) Maine.

Supplemental field investigations, including a comparison of equal money values of phosphorus alone, of phosphorus and potassium and of nitrogen, phosphorus, and potassium; a comparison of equal money values of acid phosphate and floats; acid phosphate and kainit used together in connection with manure; a test to determine what crops of the rotation should be fertilized for best results; what crops should receive the manure products of the farm; what proportion of nitrogen, phosphorus, and potassium are most profitable; a comparison of the newer carriers of nitrogen, phosphorus, and potassium; a comparison of commercial fertilizers with manure as carriers of nitrogen, phosphorus, and potassium; the application of lime at different times during the rotation; coarse limestone compared with fine; magnesian limestone compared with non-magnesian limestone; magnesian lime compared with nonmagnesian lime; and varying amounts of limestone per acre. Ohio.

Liming and fertilizer experiments, including a comparison of different phosphates. Tenn.

Comparison of effects of single plant foods and combinations. Mass.

Experiments to determine the value of bat guano as a fertilizer. Missouri.

Borax.

Borax injury.--Its effect on plant growth. Maine.

Quantitative borax test in connection with potash fertilization, to determine the extent to which borax in fertilizer may be injurious under different methods of application in ordinary field practice. Ind.

Borax fertilizer experiment with corn and potatoes. N.J.

Green manures.

Experiments in forage, green manure, and winter cover crops. To determine the best use of rye, winter vetch, sweet clover, the common clovers, and alfalfa, for forage, green manures, and winter cover crop purposes. Md.

Effect of green manuring on the soil. Va.

Bacteriological effect of green manures on a typical Mississippi soil. Miss.

Green manures. (Cont.)

Effect of green manuring on activity of soil microorganisms. Md.

A comparison of various kinds of green manure crops for supplying nitrogen to the soil. Del.

Green manure and cover crops. The determination of the green manure and cover crops best adapted to local conditions and the ultimate improvement of Guam soils. Guam.

Green manuring experiments, including cowpeas, soy beans, and buckwheat. (Branchville) Md.

Green manuring experiments, including crimson clover, hairy vetch, rye, red clover, and alsike clover. (Branchville) Md.

A comparison of the value of green manures, barnyard manures, and summer fallow, using sweet clover and rye as green manures. Wyo.

Trials with various legumes for green dressing purposes. To find a legume resistant to caterpillar and fungus attacks which will be suitable for green dressing purposes. Virgin Islands.

Green manuring experiments with cowpeas. To determine the effect of the cowpea crop when turned under, on nonlegumes immediately following. Tenn.

Fertilizer and green manure experiments for various truck crops. To determine the profitableness of crimson clover and cowpeas as green manure crops in truck farming, also to study the comparative influence and profitableness of fertilizers in connection with the green manure crops. Tenn.

Lime. (See also Soils- acidity).

Lime studies. (Vegetation experiments in outside tile cylinders supplemented by laboratory work). N.Y. State.

Lime investigations, including the use of different amounts of native and Tennessee lime rock, slaked lime, and combinations of these with rock phosphate. Miss.

An experiment for the purpose of determining the proper fineness of grinding limestone for agricultural purposes and the rates and methods of its application to an acid soil. Missouri.

Field test of the value of limestone of different degrees of fineness, as compared to equivalent amounts of burned lime, hydrated lime, and by-product lime. Penn.

Fate of the coarse limestone particles on plat 32 of the general fertilizer experiment. Penn.

Effect of different rate of application of limestone. La.

A study of the effect of various forms of lime. Del.

A field comparison of various forms of lime, also rate-of-liming experiments. Tenn.

Lime. (Cont.)

Calcium y. magnesium limestone. Md.

The effect of lime on various crops. Ala.

Composition and distribution of limestone in Arkansas. Ark.

Field tests with lime to ascertain beneficial effects of liming, especially on the poorly drained bottom land. Alaska.

Lime studies on peat soils, to determine the kind and amount of lime to use on peat soils. N.C.

Lime studies on muck soils, to find the most economical kind and amount of carriers of lime to use on muck soils. N.C.

Lime studies, to determine whether crops can be successfully grown with lime and phosphates alone. N.C.

Study of the relative value of different sources of lime. Mass.

Downward progress through the soil, if any, of lime applied as top dressing. Penn.

Decomposition of calcium and magnesium carbonates in soils under field conditions, including drainage investigations. Tenn.

Lime studies.--The use of lime in a standard crop rotation for this region, different forms of lime, effects of the fineness of grinding on value of limestone. Va.

Application of lime to soils, to determine the best form of limestone, degree of fineness and the most economical quantity to apply. Ill.

To compare the relative effectiveness as soil amendments of burned lime, limestone, marl, gypsum, dolomite and magnesite and of limestone ground to different degrees of fineness. N.Y. Cornell.

Manure.

A study of the comparative returns from manure applied immediately prior to the seeding of wheat and the seeding of cowpeas in a cowpea-wheat rotation. Tenn.

Reinforcement of manure with phosphates for corn, hay, and grass. Conn.Storrs.

Manure economy tests. (Market Garden Field Station) Mass.

A comparison of the value of barnyard manures, green manures, and summer fallow using sweet clover and rye as green manures. Wyo.

Field experiments with fertilizers and manures. Ohio.

Experiments to determine the best place for the application of farmyard manure in a standard five-year crop rotation. Tenn.

Manure as a fertilizer for major crops. (Hermiston Branch Station) Oreg.

Manure. (Cont.)

Studies in housing live stock for efficient handling and preservation of manure. Oreg.

Care, use, and value of manure. Oreg.

Effect of weathering and storage upon the composition of barnyard manure. Missouri.

The decomposition of manure. N.Y. State

Nitrogen changes in manure and preservation. N.Y. State.

Nitrogen.

Nitrogenous fertilizer experiment, to determine the relative value of various carriers of nitrogen. N.C.

The value of different carriers of plant food ingredients, including nitrate of soda and sulphate of ammonia with more and less lime; nitrate, sulphate, cyanamid and manure for grass top-dressing, nitrate, blood, hoof meal, horn meal, star fish, hen manure, tankage and acid fish in sunken pots with more and less lime, with and without cover crop. R.I.

Availability of nitrogenous fertilizer materials. N.J.

Comparison of nitrogenous fertilizers. Mass.

Comparative tests of nitrogenous fertilizers. (Pee Dee Station) S.C.

Comparative tests of nitrogenous fertilizers. (Coast Station) S.C.

Nitrate investigations. A comparison of ammonium nitrate and cyanamid when applied to corn. Miss.

Nitrogen economy in cane soils. To determine the comparative utility of nitrate of soda, sulphate of ammonia, and leguminous manures as sources of nitrogen for cane fertilization. P.R.

A study of the chemical and physical effects of nitrate of soda on citrus soils. (Riverside) Calif.

The study of ammonium sulphate in relation to plant growth.--The effect of ammonium sulphate upon the availability of soluble and insoluble iron in nutrient solutions for plants. N.J.

Phosphorus.

Phosphorus fertilizer tests. Mont.

Comparative tests of phosphate fertilizers. S.C.

A field test of different carriers of phosphorus. Penn.

Comparison of phosphate carriers. Mass.

Relative value of different amounts of phosphoric acid on Dekalb soils. Penn.

Phosphorus. (Cont.)

Liming and fertilizer experiments, including a comparison of different phosphates. Tenn.

Determination of the relative values of different forms of phosphorus upon the soil at Columbia. To determine the availability, the value and the effect upon both soil and crop of the phosphorus as supplied in a number of phosphorus carriers. Missouri.

Study of certain fertilizers in relation to production- particularly a study of acid phosphate in relation to flower production. To determine the amount that should be applied to the soil and the conditions affecting its use by growing plant. Ill.

An attempt to determine the reason for the superiority of limestone and acid phosphate over limestone and rock phosphate in crop production on certain types of soil. Ky.

Availability and utilization of phosphorus compounds for crop use, on the red soils of Oregon, what forms of phosphate fertilizer will give best results, what practices will make the insoluble phosphate fertilizers available to crop use, what practices will make phosphate compounds of these soils more available, what differences there may be in feeding power of crops for rather insoluble phosphates. Oreg.

The comparative values of different phosphates as determined by field experiments. Tenn.

A study to determine the influence of composting commercial organic ammoniates, ground phosphate rock and rich soil, on the availability of the phosphorus content of the ground rock and on the loss of ammonia content of the organic ammoniates. Ga.

A study of the availabilities of raw phosphates compared with acid phosphates made insoluble with lime and with ferric-aluminum salts, checked against no phosphorus, and acid phosphate untreated. Ga.

Phosphate experiment, to compare the availability of the phosphorus in raw ground phosphate rock with acid phosphate, when used with green manures. (Branchville) Md.

A comparison of the efficiency of acid phosphate and raw rock ground phosphate with and without manure. S.Dak.

Phosphate experiment, comparing the value of rock phosphate against acid phosphate on continuous corn and crimson clover. N.C.

Phosphate studies, to work out the relative efficiencies of acid phosphate, soft phosphate, rock phosphate, and basic slag on the different soil types of the State. N.C.

Rock phosphate v. acid phosphate, comparing different amounts of ground raw rock phosphate, against a complete fertilizer with acid phosphate. N.C.

The value of different carriers of plant-food ingredients. Acid phosphate, floats, double superphosphate, Thomas slag, bone, with more and less lime. R.I.

Phosphorus. (Cont.)

To determine definitely the effect of phosphorus in different forms on the growth of plants and the effect of sulphur in combination with calcium and as pure sulphur on the growth of plants and its effect on the availability of phosphorus in different forms and to determine definitely the solubility of phosphorus in different forms. S. Dak.

Influence of various silicates on crop growth and utilization of phosphates. Ohio.

Sulphur oxidation (as a means of rendering phosphates available). N.J.

Composting raw phosphate rock and sulphur with different soils. Tex.

Sulphur as an agency in the liberation of phosphorus. To determine means of producing acid phosphate through biological action. Ill.

Availability of rock phosphate in acid soils. Ark.

Composting floats to render the phosphoric acid more readily available. Va.

Effect of fertilizers on availability of rock phosphate as indicated by the phosphorus content of the oat plant. Ohio.

To test the availability of floats as influenced by farm manure and to compare this carrier of phosphorus with acid phosphate by field trials. N.Y. Cornell.

Basic slag as a carrier of phosphates. To determine, on soil that responds to phosphoric acid when nitrogen and potash are added, if basic slag is an economical material to use. N.C.

Experiments with barium phosphate. (Market Garden Field Station, Lexington) Mass.

Potash.

The value of different carriers of plant-food ingredients. Muriate of potash, sulphate of potash, kainit, magnesium-potassium sulphate; with their principal elements left out of the basal fertilizer; potassium chlorid and carbonate supplemented with sodium chlorid and carbonate with more and less lime to determine the specific effect of sodium salts on asparagus. R.I.

A study of the value of the various potash fertilization materials. To determine the relative value of various domestic potash materials compared with standard German potash salts, such as muriate of potash, as sources of potash fertilization. Ind.

Comparison of seven potash carriers. Mass.

Comparison of sulphate of potash (high grade) with muriate of potash for various crops. Mass.

To determine the effect, if any, of potash salts on the reaction, nitrate formation, and soluble salt content of soils, also their influence on the growth of wheat seedlings in water. Penn.

Effects of impure potash salts on germination and subsequent growth of plants. Va.

Potash. (Cont.)

A study of the effect of trona potash on cotton and corn. S.C.

Availability of potash in greensand marl. N.J.

Sulphur (See also Plant nutrition)

To determine the influence of the biological factor on the oxidation of sulphur. N.J.

The relation of sulphur to soil fertility and plant composition. Oreg.

Function of sulphur as a plant food. Wash.

Function of sulphur in relation to soil. Oreg.

Sulphur as a fertilizer for Wyoming soils. Wyo.

Sulphur as a fertilizer for alfalfa. (Talent Branch Station) Oreg.

To determine the effect of sulphur on the yield of alfalfa. (Aberdeen Substation) Idaho.

To determine definitely the effect of phosphorus in different forms on the growth of plants and the effect of sulphur in combination with calcium and as pure sulphur on the growth of plants and its effect on the availability of phosphorus in different forms and to determine definitely the solubility of phosphorus in different forms. S. Dak.

Miscellaneous.

High phosphoric acid v. high potash fertilizers. Mass.

A study to determine what part colloidal matter plays in the efficiency of commercial fertilizers. Ga.

FIELD CROPS.

General.

Miscellaneous crop investigations. Iowa.

Cooperative experiments with field crops. Iowa.

Methods of harvesting test plats. To study the accuracy of records secured by harvesting a portion of a plat in comparison with the yields secured from the entire plat. Md.

Demonstration farms, to determine under local farm conditions, the advantages of proper cropping, rotation, correct cultural methods, and good seed. (Demonstration farms) N. Dak.

General agronomic, fertilizer, cultural, and variety tests of edible root-crops. To determine the best combinations of fertilizers, the best cultural methods and the best varieties. Hawaii.

Fertilizer, crop rotation, variety studies, and cultural experiments with particular crops. Va.

Field crops, general. (Cont.)

General agronomic, breeding, selection, and variety tests of field and forage crops. To develop better strains. Comparative tests to indicate the most promising of the introduced and developed varieties. Hawaii.

A test of 20 different crops and crop combinations used as catch crops at last cultivation or after corn harvest. Ohio.

Crop production studies. Tex.

High altitude crops. Colo.

Miscellaneous plantings at Imperial Valley Experiment Station. Calif.

Cooperative crop experiments on farmers' lands. Ariz.

Root crop investigations to learn best varieties and cultural methods for yautias, dasheens, and sweet potatoes for Porto Rico. P.R.

Cultural experiments, to determine the effect of grain, live stock, and diversified systems of farming on the continuous cropping of grain sorghums, cotton, and oats. Okla.

Continuous cultural experiments.--Corn, oats, and wheat grown continuously at Wooster and tobacco at Germantown. Ohio.

Alfalfa.

Alfalfa breeding. Colo.

Practical alfalfa breeding, to secure a variety at least as hardy as the Grimm variety which can be easily distinguished from all other varieties. N. Dak.

Development of strains of alfalfa and sweet clover with a minimum per cent of hard seeds. Wyo.

Development of strains of alfalfa for maximum hardiness and yield. Wyo.

Breeding of hardy alfalfas in attempting to secure strains, which will produce seed under Iowa conditions. Iowa.

Breeding alfalfa with reference to the extreme sub-tropical conditions of Arizona. Ariz.

Inheritance in hardiness of alfalfa.--To obtain data as to the genetics of hardiness in alfalfa and thereby to lay a foundation for future practical breeding operations. N. Dak.

Plant-to-row tests of selected strains of alfalfa. Ohio.

Alfalfa strain tests. N.J.

Alfalfa experiments. Va.

A study of the adaptations of the important types, varieties, and regional

Alfalfa. (Cont.)

Variety testing and crop improvement.--Tests of small grains and varieties of alfalfa, improvement by selection of desirable strains. Nev.

Alfalfa varieties- adaptations. N.Y. State.

Alfalfa for West Virginia. W. Va.

Alfalfa variety tests to find hardy alfalfas for pasture and hay. Alaska.

Variety test of alfalfa. Mass., N.Y. Cornell, Oreg.(Hermiston Branch Station)

Alfalfa variety tests. Miss.

Alfalfa variety tests, to compare some of the more common varieties of alfalfa now found on the market with native-grown alfalfa and to ascertain if any of these much-talked-of strains are better suited to the irrigated valleys than those now being grown. N. Mex.

A test of 15 varieties and regional strains of alfalfa. Ohio.

A comparison of varieties and strains of alfalfa for hardiness and yield. Iowa.

A test of the different species and varieties of alfalfa. Penn.

Variety tests of corn and wheat and alfalfa work.(Germantown Test-farm) Ohio.

Variety tests of corn, wheat, and oats, and work with alfalfa. (Carpenter Test Farm) Ohio.

Alfalfa and clovers in comparative trials. Iowa.

Alfalfa tests.--Varieties and methods of seeding. Mont.

Source of alfalfa seed with reference to hardiness. Wyo.

Alfalfa seed growing to establish varieties of hardy alfalfas by the use of Alaska-grown seed. Alaska.

The comparative value of seed testing different weights per bushel, with alfalfa and clover. Ohio.

Hard seed of alfalfa. Colo.

The effect of scarifying alfalfa and clover seed with the Ames scarifier. Ohio.

Rate of seeding alfalfa as influencing freedom from weeds and yield. Iowa.

Different rates of seeding alfalfa, ranging from 5 to 25 lbs. per acre. Ohio.

Methods of reseeding alfalfa. Iowa.

Winter y. spring seeding of alfalfa, sweet clover, and red clover. Ind.

A comparison of different methods of distributing alfalfa seed. Ohio.

Methods of seeding alfalfa. Iowa.

Alfalfa. (Cont.)

A survey of alfalfa growing in the State. Tabulating results secured by Iowa farmers, comparing results secured on different soils from different times of seeding, rates of seeding, time of cutting, etc. Iowa.

Cultural trials with alfalfa. Conn. Storrs.

Cultural experiments with alfalfa. Missouri.

Different methods of cultivation of alfalfa. Iowa.

The value of disking and manuring in cleaning and renewing old alfalfa fields. Ohio.

Effect of more common fertilizers on yield, and of inoculation by pure cultures on alfalfa under irrigation. N. Mex.

Effect of limestone, rock phosphate, and acid phosphate on the growth of alfalfa when planted on bluff soils. La.

To determine the effect of sulphur on the yield of alfalfa. (Aberdeen Substation) Idaho.

Sulphur as a fertilizer for alfalfa. (Talent Branch Station) Oreg.

To determine the advisability of manuring upland alfalfa. Okla.

Alfalfa investigations: Factors influencing the securing of a good stand of alfalfa; effect of late and frequent cuttings; conditions causing winter-killing; comparison of hardiness of various varieties and strains; and factors causing yellowing of alfalfa. Wis.

Effect of pea variety on its value as a nurse crop for alfalfa. (Aberdeen Substation) Idaho.

A comparison of nurse crops in seeding clover and alfalfa. Iowa.

Vegetation house studies with alfalfa to be used as a check on the irrigation work under field conditions. Utah.

Duty and effect of duty of water on alfalfa. N. Mex.

To secure the best method of growing and handling and especially the effect of drainage on the life of alfalfa; secondarily to determine the effect on yield of corn following the crop. (Sugar Experiment Station) La.

Studies of the effects of cutting alfalfa hay at different stages of growth. Kans.

Comparison of first, second, and third cuttings of irrigated alfalfa hay with each other and with corresponding cuttings of dry alfalfa as feeds for milk production. Wash.

The yellowing and dying of alfalfa in July and August. Md.

Barley.

Investigations with winter barley. Missouri.

Breeding barley. N.Y. Cornell.

Barley improvement. Idaho.

Breeding work with barley. S.C.

Barley, rye, and oat breeding. Wis.

Barley breeding to develop earlier and better varieties for growing in Alaska.
Alaska.

Barley breeding for strains better adapted to Iowa conditions. Iowa.

Variety tests with barley. S.C.

A comparison of commercial varieties of barley. Iowa.

Variety testing and head selection of barley for yield and early maturity. Wyo.

Barley variety tests to learn which varieties will mature and prove useful.
Alaska.

Variety trials with wheat, barley, and oats in plats. Calif.

A study of the adaptation of the important varieties of spring barley for
Missouri conditions. To determine the adaptation of different standard
varieties of spring barley to the various soil types of the State. Missouri.

Barley: Variety tests and cultural experiments. Va.

Variety and cultural tests with winter and spring barley and oats. Ark.

.. Date-of-planting experiments with barley, oats, and wheat. Tenn.

Rate and time of seeding barley, wheat, and oats. Wyo.

Rate of seeding barley as influencing the yield. Iowa.

Study of the relation of the concentration of nutrient solutions to the growth
of the barley plant in sand and water cultures. The relation of solution to
absorption and forms of combination of important elements. Calif.

Effect of stage of maturity at harvest upon the germination power of barley,
wheat, and oats. Wyo.

Breeding field crops, general.

Breeding miscellaneous field crops. Minn.

Breeding experiments with wheat, oats, corn, and sorghums. Kans.

Improvement of certain crops by selection. Tenn.

To develop strains of the respective crops best suited for Oklahoma conditions,

Breeding field crops, general. (Cont.)

Crop breeding, including cereals, legumes, grasses, and forage crops. Mich.

The production from single parent plants of improved strains. Mich.

Crop improvement by seed selection and breeding. To improve the seed of crops grown at the central and branch stations. N.C.

Crop improvement by mass and individual plant selection, including small grains, corn, grain sorghums, and peanuts. Tex.

Seed crop improvement. Colo.

A comparison between hill method and row method for determining relative yield of selected strains of plants. W. Va.

Brome grass.

Isolation and fertilization of strains of brome grass.--To obtain self-fertilized seed of improved strains for increase. N. Dak.

Yield studies of different clone types of brome grass.--To secure data to aid in future practical breeding and selection. N. Dak.

Variation studies with brome grass.--To secure data upon the variability and amount of correlation existing in the species in different geographic strains, and between sibs and clones. N. Dak.

Study of brome grass, to determine nutrient value and ash constituents of brome grass at different stages of growth. N. Dak.

Broom corn.

To compare different types of broom corn for the production of brush, and to determine the best cultural methods for the crop under irrigation. N. Mex.

Buckwheat.

Buckwheat investigations. W. Va.

Breeding to secure improved strains of buckwheat. (Aroostook Farm) Maine.

Variety tests and methods of seeding buckwheat. W. Va.

Studies in crop cultural methods.--The best time to sow buckwheat. Ind.

Culture experiments with buckwheat, rate and method of seeding. (Aroostook Farm) Maine.

Cane (sugar).

Raising of cane varieties of high sugar content and tonnage, resistance to diseases; suited to the various climatic and soil conditions of the Island. Such varieties to replace present run-down ones. Porto Rico.

Cane breeding experiments, to increase the quantity of sugar per acre produced in the Island. Virgin Islands.

Cane (sugar). (Cont.)

Cane variety experiments, to increase the quantity of sugar per acre capable of being produced in the Island. Virgin Islands.

Sugar cane varieties, to secure a variety that will give a more profitable yield of sugar per acre. La.

Fertilizer experiments with Japanese cane. Fla.

Fertilizer experiments with sugar cane, to determine the commercial effect of added plant food. (Sugar Experiment Station) La.

Complete fertilizer experiments with sugar cane. Ala.

Winter cover crops on fall planted cane.--To utilize the fall, winter, and early spring months to grow an extra leguminous crop in the regular rotation. La.

Japanese sugar cane for sirup. Ala.

Cereals, general. (See also specific cereals).

Investigations in cereal breeding. Minn.

Cereal breeding and selection. S.Dak.

Selection and breeding with wheat, barley, and rye. (Union Branch Station) Oreg.

Pure line selection- looking to the improvement of the self-pollinating class, including wheat, oats, and soy beans. Ill.

Cereal investigations: Selection, propagation, and testing of pure lines of promise. Va.

Small grain improvement by selection and breeding. Ark.

The increase and fixation of desirable properties in cereals. Ohio.

Correlation of characters in grain. Colo.

Inheritance study of cereals. Wash.

Variety testing, breeding, acclimatization, and cultural studies of small grains. Nebr.

Grain varieties. Utah.

Collecting and testing varieties of corn, small grains, beans, and soy beans, at the station and other points in the State in order to determine the measure of adaptability in each case to the local requirements. Mich.

A varietal and cultural test of grain and forage crops and of grasses and miscellaneous crops. Ariz.

Variety tests of grain and forage. Mont.

Cereals, general. (Cont.)

Grain investigations to test many varieties of grain, especially the hybrids produced at Rampart, to ascertain adaptability to the Matanuska Valley. Alaska.

Variety tests of grains. S. Dak.

Tests of the value of different strains of small grains for the State. Conn. Storrs.

Tests of small grains and varieties of alfalfa, improvement by selection of desirable strains. Nev.

Cereal variety tests to test new and standard varieties of spring wheat, oats, barley, winter rye, as to yielding capacity, resistance to disease, trade value as measured by milling and baking tests. N.Dak.

Variety test of cereals in pure line plats: Selection of varieties and increase of pure line seed of best varieties. N. Mex.

Varietal trials of winter and spring wheats, oats, rye, and barley. Oreg.

Variety tests with wheat, oats, barley, and miscellaneous grains under dry land and irrigation. (High Altitude Substation) Idaho.

Variety tests and breeding wheat, oats, barley, and miscellaneous grains such as flax. (Aberdeen Substation) Idaho.

Variety test of cereals for the production of hay. (High Altitude Substation) Idaho.

Variety tests with wheat, oats, and barley. (Sandpoint Substation) Idaho.

Cereal varietal and cultural investigations. Wash.

Culture and management of winter and spring grains, including wheat, oats, barley, and rye. Ariz.

Effect of thickness of stand on cereal plants. Nebr.

The drilling of small cereals in rows 4 in. apart as compared with 8 in. Ohio.

Small grain culture work, to study dates and rates of seeding wheat and oats at the Piedmont Branch Station, and oats at the Coastal Plains Branch Station. N.C.

Field crop investigations under both dry farming and irrigation. Date and rate of seeding investigations with wheat, oats, barley, rye, field peas, corn, alfalfa, sunflowers, grasses, potatoes, and other minor crops. (Burns Branch Station) Oreg.

Rates of seeding spring grain, wheat, oats, and barley. Mont.

Late seeding of winter grain. Iowa.

Dates of seeding spring grain, wheat, oats, and barley. Mont.

Cooperative tests of small grains with county agents through an agreement with the extension division to assist in the standardization of small grain

Cereals, general. (Cont.)

Rye, emmer, and miscellaneous grains. Idaho.

Top dressing winter grains. Ga.

A study to determine at what time in the life of the cereals, potassium must be supplied to produce normal growth. N.H.

Relation of soil moisture, structural development, and yields of small grain. Colo.

Grain mixture for grain and forage. Mont.

The relation of seed treatment to the physiology of grains. Oreg.

Triangular grain tests with other States, to study the effect of climatic change on the crop. Mont.

Cooperative experiments with cereal and forage crops (outlying experiments) Ark.

Investigation with small grains. Minn.

Ash and silica content of grain straw. Minn.

Clovers, etc. (See also Legumes)

Red clover breeding. Iowa.

Plant-to-row tests of strains of red clover grown from individual plants. Ohio.

Clover and grass selection. W. Va.

Selection work with bur clover to develop a hardy strain adapted to the locality. Miss.

Variety tests of clover. N.Y. Cornell.

Clover variety test. Wis.

Variety tests with bur clover. Miss.

A comparison of the different species and varieties of clover, as to yield. Ohio.

Clovers and alfalfa in comparative trials. Iowa.

Yield tests of various clover and grass mixtures. N.Y. Cornell.

Testing clovers for yields of hay. Va.

Relative production of red clover, alsike clover, yellow and white sweet clover for hay and pasture. (Union Branch Station) Oreg.

Mixtures of crimson clover and different kinds of grains for hay and for winter cover crops. Ala.

Clovers, etc. (Cont.)

A comparison of the use of clover for hay with its direct use as a fertilizer in a 3-year rotation of corn, wheat, and clover, and when used as a fertilizer, a further comparison of plowing it under at different times, followed by different treatments. Ohio.

A comparison of methods and times of seeding clover. Ohio.

Methods of seeding red clover. Iowa.

Rates of seeding red clover as influencing yield. Iowa.

Red clover: A survey of results secured by Iowa farmers comparing different methods of seeding, rates of seeding, curing of hay, etc. Iowa.

Winter y. spring seeding of red clover, alfalfa, and sweet clover. Ind.

The comparative value of seed testing different weights per bushel, with clover and alfalfa. Ohio.

Influence of height and time of cutting for the best production of seed of red clover. Ill.

The effect of scarifying clover and alfalfa seed with the Ames scarifier. Ohio.

Trials to determine the best method of securing stands of clover. Oreg.

A comparison of nurse crops in seeding clover and alfalfa. Iowa.

Red clover y. sweet clover as a legume for pasture purposes. Tenn.

Winter-killing test with crimson clover, to determine the best source to secure crimson clover seed from the standpoint of ability to withstand the winters in the eastern part of the State. N.C.

Clover investigations to study the various factors that affect the production of clover under the conditions of this part of the country, and especially to determine the reasons for clover failures, and to develop practical methods of overcoming them. Ind.

The value of clover in fertility maintenance. Ohio.

Chemical composition of clover. Mont.

Clover, sweet.

Breeding annual white sweet clover. Iowa.

Breeding biennial white sweet clover for resistance to disease and more uniform setting of the seed. Iowa.

Sweet clover seeding and breeding investigations. Missouri.

Strain tests with biennial white sweet clover. Iowa.

Annual white sweet clover strains compared. Iowa.

Clover, sweet. (Cont.)

Annual white-sweet clover adaptation studies. Iowa.

Sweet clover investigations to study the adaptability of different regional strains of white and yellow blossomed sweet clover to North Dakota conditions. To study the influence of nurse crops upon forage and seed production and to determine the best rates and dates of seeding. To compare differences in different strains of yellow sweet clover; to compare yellow and white sweet clover as to value for hay purposes; and to study the process of silage production from sweet clover. N. Dak.

Development of strains of sweet clover and alfalfa with a minimum per cent of hard seeds. Wyo.

Sweet clover seed studies. Iowa.

The comparative value of seed testing different weights per bushel, with alfalfa and clover. Ohio.

Cultural tests with annual white sweet clover. Iowa.

Cultural and selection work with the annual strain of white sweet clover discovered by the Iowa Experiment Station. Ohio.

Cultural test with sweet clover. Idaho.

Rates of seeding biennial sweet clover. Iowa.

Methods of seeding biennial sweet clover. Iowa.

Winter y. spring seeding of sweet clover, alfalfa, and red clover. Ind.

Sweet clover investigations, to determine both the time of seeding and method of preparing the seedbed in growing sweet clover. Okla.

Value of sweet clover as forage crop for Wisconsin. Wis.

Sweet clover y. red clover as a legume for pasture purposes. Tenn.

Relative production of red clover, alsike clover, yellow and white sweet clover for hay and pasture. (Union Branch Station) Oreg.

Effect of height of cutting sweet clover upon the quantity and quality of hay, as well as the subsequent influence of such practices on permanence of stand. Ill.

Influence of both time and height of cutting of sweet clover on stand and yield. Tenn.

A survey of biennial sweet clover growing in the State, tabulating results secured by Iowa farmers comparing results secured on different soils from different times of seeding, rates of seeding, time of cutting, etc. Iowa.

A comparison of nurse crops in seeding alfalfa and clover. Iowa.

Water as a limiting factor in the growth of sweet clover. S. Dak.

Clover, sweet. (Cont.)

Sweet clover investigations. Penn.

Corn.

Mendelian studies with corn. N.Y. Cornell.

Genetic principles as applied to corn improvement, to improve the quantity and quality of field crops, by the Mendelian analysis of characters. Ill.

Inheritance of barrenness in corn. S.C.

Chromosome numbers in corn and development of embryo sac. N.Y. Cornell.

Development of chondriosomes in relation to plastid inheritance in corn. N.Y. Cornell.

Xenia in maize and hereditary transmission of various characters. Conn. State.

Inbreeding and crossbreeding experiments with corn. Maine.

Studies of inheritance in corn, particularly as applied to inbreeding. Wis.

Corn breeding. Ind. Miss., Penn.

Corn breeding investigations. Iowa, Minn.

Breeding experiments with corn. Ala.

Breeding corn for grain and silage. N.Y. State.

Breeding corn to influence certain physical characteristics, looking to the improvement of the corn crop. Ill.

Degree of close breeding in maize. Nebr.

Breeding work with Lowman Yellow corn. S.C.

Breeding work with Lee County corn. S.C.

Improvement of corn for use on the Island. Virgin Islands.

Development of early-maturing varieties of corn for northern Wisconsin. Wis.

Studies on development of cold-resistant corn. Wis.

Selection and breeding work with corn, ear-row and remnant method. Mich.

Corn selection and culture. Selection from mass; ear-row selection; selection from area where backward or unproductive stalks are detasseled. R.I.

The effect of the isolation of superior ears of corn, as determined by testing in pure-line breeding. Ohio.

Ear-to-row test with corn. Ga. W.Va.

Ear-to-row studies with corn to secure high-yielding and early strains. N.Dak.

Corn. (Cont.)

The testing of individual ears of corn in ear-row work. Ohio.

Breeding corn to influence composition. The improvement of the composition with a view of adaptation to specific purposes. Ill.

The effect of crossing standard varieties of corn, on yield. Ohio.

The relation of prominent visible characters in ear and stalk of corn, to yield: Shape of ear; length of ear; weight of ear; number of rows per ear; filling of tip; indentation of kernels; specific gravity of kernels; height of ear on stalk; height of plant; angle of ear; proportion of grain to cob; proportion of grain to stover. Ohio.

Corn production, selection, breeding and variety adaptation. Md.

The crossing of superior ears of corn as determined by previous ear-row tests, and the multiplication of pedigreed crosses in isolated plats. Ohio.

To secure a white flint corn that is equal or superior to yellow creole. La.

Improvement of dent, flint, and sweet corn in yield and feeding value, by breeding work in 3 different localities- extended to include work with tomatoes, especially the value of first generation hybrids. Conn. State.

The raising of a strain of corn which is an improvement on yield, disease resistance, and uniformity of maturing. P.R.

Corn improvement, to increase the yield of corn on the Island. Virgin Islands.

Corn improvement, to procure an earlier maturing, lower growing strain of corn for Guam; to increase the yield and quality, if possible, along with above improvement, of the corn grown here. Guam.

Crossing improved corn with Hopi maize, to produce a variety of acclimatized corn which can be planted deep in the moist subsoil and germinates successfully. Virgin Islands.

Selection and breeding of corn to produce home-grown seed. (Aberdeen Substation) Idaho.

Corn selection and breeding: Improving the Calhoun Red Cob. La.

Breeding of superior flint corn seed. Distinct strains of flint corn crossed for hybrid seed. (Highmoor Farm) Maine.

Corn investigations to establish a system of corn breeding to produce an improved variety for this section of the State. (Caldwell Substation) Idaho.

Corn breeding and improvement (University Farm, Aberdeen, and Caldwell Substations) Idaho.

Work with flint corn: Variety tests, selection and breeding to secure new and improved strains. (Highmoor Farm) Maine.

Experiments with corn, variety testing, and improvement. (South Mississippi Branch Station, Poplarville) Miss.

Corn. (Cont.)

Corn variety tests. Ala., Ga., La., N.Y. Cornell, S.C., W.Va.

Variety tests of corn to determine yields of different varieties of corn as shown by competitive tests. Okla.

Comparison of the most promising varieties of corn. Conn. Storrs.

Corn variety strain demonstrations and tests. N.J.

Corn variety and strain tests. Iowa.

Variety tests in corn, to secure the variety which is best adapted to local conditions. (Sugar Experiment Station). La.

Varietal corn test to compare types and varieties of corn suited to North Dakota as to their yields of dry matter and feeding value. N.Dak.

A test of varieties of corn for comparative yields. (Valentine Substation) Nebr.

Variety test of sweet and silage corn. Maine.

Corn variety trials for silage. Oreg.

Silage corn variety tests. Miss.

Corn investigations to determine the yielding capacity of introduced varieties as compared with those locally grown for the production of silage. (Caldwell Substation) Idaho.

A test of 14 varieties of corn for silage. Ohio

Variety tests of corn for the production of silage. (Aberdeen Substation) Idaho

Silage corn varieties and legumes to climb on them. R.I.

A test of different varieties and distinct pedigreed strains of corn, in the usual tenth-acre plat test. Ohio.

A comparison of about 14 varieties of corn as to yield, weight of grain, resistance to disease, etc., also a late planted variety test to determine which varieties of corn are most productive for late planting. Ala.

Variety tests of corn, oats, and soy beans. (Miami County Experiment Farm) Ohio.

Variety tests of corn, oats, and soy beans and a rate of seeding test of corn. (Paulding County Experiment Farm) Ohio.

Collecting and testing varieties of corn, small grains, beans, and soy beans, at the station and other points in the State in order to determine the measure of adaptability in each case to the local requirements. Mich.

Testing varieties of corn, wheat, soy beans, and oats. Del.

Variety tests of corn and soy beans and a rate of seeding test of corn. (Hamilton County Experiment Farm) Ohio.

Corn. (C ont.)

Variety tests of corn and wheat and alfalfa work. (Germantown Test Farm) Ohio.

Variety tests of corn, oats, and wheat. (Clermont County Experiment Farm and Findlay Test Farm) Ohio.

A study of the varieties and methods of culture of Indian corn and the various sorghums. Ariz.

Variety tests of corn, wheat, and oats, and work with alfalfa. (Carpenter Test Farm) Ohio.

Variety trials with various farm crops, such as corn, wheat, oats, soy beans, vetch, etc. Tenn.

A study of the adaptations of the important varieties of corn for Missouri conditions. Missouri.

Variety studies with crops: Corn variety and cultural experiments. N.Y. State.

Variety and cultural tests with corn. Va.

Corn variety and fertilizer tests. Growing legumes in and between the rows. Miss.

Effect of temperature at the time of germination of corn upon growth and yield, to determine the influence of season and soil conditions upon the physiological phases of the corn plant. Ill.

Effect of temperature and moisture content upon the viability and vigor of growth of corn, to determine the effect upon seed corn which while containing varying degrees of moisture, is subjected to freezing temperature. Ill.

Phenological observations as related to time of planting corn, to determine the relation between certain common periodical annual events, such as the budding and flowering of trees to the best time to plant corn. Ind.

Effect of early and late planting on maturity. R.I.

Corn cultural tests. Iowa, S.C.

Cultural methods for corn, to test methods of preparing the ground, applying the water, and cultivating the crop. N. Mex.

Early planting of silage corn. N.H.

Cultural tests of corn for silage production. Idaho.

A study of silage corn and supplementary silage crops, especially sunflowers and soy beans. N.Y. Cornell.

A comparative test of growing corn and sunflowers for silage. Penn.

A comparison of yield of the ranker growing varieties of sorghum with standard varieties of corn for silage. Ala.

A test of the practicability of growing soy beans with corn for silage. Penn.

Corn. (Cont.)

Silage corn tests, to determine the relative yield, maturity, and adaptability of the varieties in the different sections of the State and to compare them with other local or favorite varieties. N.H.

Tillage experiments with corn: Soil preparation and methods of cultivation. Tenn.

Date-of-planting trials with various crops, corn in particular. Tenn.

The relation of date of planting to yield of corn. Ohio.

Cultural experiments with corn, including the rate of planting, methods of preparing sod land and stubble land, depth of plowing and subsoiling, methods of cultivation and planting. Missouri.

Rate-of-planting experiments with both corn and soy beans. Tenn.

Rate-of-planting experiments with both corn and cotton. Tenn.

Intertillage in corn. To determine the most advantageous practice in cultivating corn. Ill.

Tillage experiments with both corn and cotton, to determine the best depth of plowing and cultivation. Tenn.

Comparison of commercial fertilizers (cottonseed meal and acid phosphate) with and without organic matter on the yield of corn. La.

Complete fertilizer experiments with corn. Ala.

Fertilizer experiments with corn: To secure proper ration of nitrogen and phosphoric acid for corn; to determine maximum profitable application of fertilizer on corn. La.

Fertilizer under and around corn. Ga.

The effect of different amounts and different methods of applying commercial fertilizers to the corn crop, to determine the effect of adding various amounts of commercial fertilizer to corn both in the hill or drill and over the entire soil surface upon the resulting crop. Missouri.

Rate of application of fertilizer to corn. Ga.

Experiments with sources of nitrogen on corn. Ala.

Time of application experiments with nitrate of soda for corn and cotton. Tenn.

Time of applying nitrate of soda on corn. Ala.

To test the time when nitrate of soda should be applied to corn and cotton to secure the greatest benefits. Ala.

Corn fertilizer experiment, being a study of the relative value of nitrate of soda and acid phosphate in the continuous growing of corn. N.J.

A comparison of nitrate of soda with peanut meal, velvet bean meal, and cottonseed meal as a source of nitrogen for corn and cotton. Ala.

Corn. (Cont.)

Acid phosphate v. rock phosphate in moderate quantities and in heavy applications on corn, cotton, and oats. Ala.

Lime experiments with corn. Ala.

A comparison of different varieties and different methods of planting soy beans in corn for silage and for hogging down. Iowa.

The relation of stand of plants to yield, with corn. Ohio.

A test of the practicability of growing soy beans with corn for silage. Penn.

The relation of previous conditions of growth to yield of corn as to stand and fertility. Ohio.

To determine the effect on yield of corn following a crop of alfalfa; to secure the best method of growing and handling, and especially the effect of drainage on the life of alfalfa. La.

Experiments in the associated growth of corn and cowpeas. Missouri.

Investigation of associated growth of corn and soy beans. Wis.

Effect of companion cropping of corn with legumes. S.C.

Growing soy beans in conjunction with corn, to determine the influence of associated growth of soy beans on the yield of corn when the two are planted together at the time the corn is planted. Ill.

Continual growth of field corn without cover crop or organic matter supplied artificially; no manure used; phosphorus and potassium alike; 20 lbs. nitrogen applied to one section and 60 lbs. to other sections. R.I.

Continual growth of field corn, with straw plowed in. R.I.

Continual growth of field corn, with legumes as cover crop. R.I.

Continued growth of field corn, with rye cover crop. R.I.

Comparative use of legumes in rotation with corn, to secure comparative yields of corn grown after crops of cowpeas, soy bean and velvet bean vines have been plowed under. (Sugar Experiment Station) La.

Corn moisture investigations. Iowa.

A comparison of the relative food values per acre of silage made from large silage corn and common field corn. Ohio.

Principles governing growth and maturity in corn. Va.

The relation of the early development of root, stem, plumule and culm in the germination box to yield of corn. Ohio.

Effect of strength of germination of corn on yield. La.

The relation of care of seed corn to yield. Ohio.

Corn. (Cont.)

The economic value of the germination test of seed corn. Ohio.

Development of the various parts of the corn plant. Missouri.

Chemical factors concerned in the formation of pigments in certain varieties of corn. Nebr.

Suckering of corn. To determine the effect upon productiveness, type, sucker-producing tendencies, etc. of continuously selected seed from suckering stalks. Ind.

A comparison of the most important grain sorghums with corn for grain and forage production. Missouri.

The effect of variations in physical characters and chemical composition of the corn kernel upon the vigor of the plant. Del.

Corn investigations, to determine adaptability of Indian corn for grain and forage production and to determine the yield of dry matter per acre at different stages in the development. N. Dak.

Critical study in the nutrition of corn: The effect of weeds in robbing the crop at different stages of the corn's development. Ill.

Analysis (chemical) of corn for selection of high and low protein strains. Minn.

The development of the various parts of the maize plant as influenced by variation in soil moisture, soil composition, and texture and the supply of plant food. Missouri.

Conditions of parasitism in maize. N.Y. Cornell.

Changes taking place in corn and corn meal when stored under different conditions. Ky.

A study in the selection and storage of seed corn as influencing vitality, including time of picking, method of storing, use of artificial heat, etc. Iowa.

Chemical tests of oats, corn, and rye. Minn.

Cost of production (See Rural Economics, Cost of production)

Cotton.

Fundamental study of inheritance in cotton. Tex.

A study of the inheritance of fruit characters in cotton. Ark.

To study the mode of inheritance and association of economic qualities in cotton. N.C.

The genotypic constitution of certain varieties of cotton. N.C.

Breeding experiments with cotton. Ala.

Cotton. (Cont.)

Wilt resistance breeding experiments with cotton. Ala.

Cotton breeding experiments to improve the quality, quantity, and disease resistance of the locally grown Sea Island Cotton. Virgin Islands.

Breeding work with Cleveland Big Boll cotton. S.C.

Breeding work with Cook cotton. S.C.

Selection and breeding of cotton. La.

Cotton variety tests. Ala., Ga., La., S.C.

Variety tests of cotton to determine the yields of different varieties of cotton as shown by competitive tests. Okla.

Cotton variety experiments and tests. Ark.

Variety tests of cotton, regular and preliminary and observational, in which a comparison is made of the yield of seed cotton, lint, earliness, percentage of lint to seed, staple, etc. Ala.

Cotton variety experiments, to determine practical value, including profit of cotton under Guam conditions: To test out different varieties and types of cotton and to improve varieties and types found best adapted. Guam.

Cotton variety test to determine whether or not cotton can be successfully grown in the irrigated valleys; to ascertain, as nearly as possible the best varieties under the climatic conditions; to compare the short staple varieties and the long staple varieties. N. Mex.

A study of the adaptation of the important varieties of cotton for the Southeast Missouri lowlands. Missouri.

Cotton variety, spacing, and fertilizer tests. (Holly Springs Branch Station) Miss.

Cotton experiments, including variety tests, cultural methods, spacing, fertilizers, and improvement by breeding. (Delta Branch Station) Miss.

Sources of nitrogen experiments with cotton. Ala.

Source of nitrogen in cotton fertilizer. Ga.

A comparison of nitrate of soda with peanut meal, velvet bean meal, and cottonseed meal as a source of nitrogen for corn and cotton. Ala.

To test the time when nitrate of soda should be applied to corn and cotton to secure the greatest benefits. Ala.

Time of applying nitrate of soda to cotton. Ala.

Time of application experiments with nitrate of soda for cotton and corn. Tenn.

A comparison of nitrate of soda, calcium cyanamid, ammonium sulphate, and ammonium nitrate on cotton as a source of nitrogen. Ala.

Cotton. (Cont.)

Top dressing cotton. Ga.

Best time to apply and kind of top-dresser to use on cotton. To determine the best time to apply soluble nitrogen as a second application to cotton, also comparing the carriers most commonly used. N.C.

Acid phosphate v. rock phosphate in moderate quantities and in heavy applications on cotton, corn, and oats. Ala.

Source of potash in cotton fertilizer. Ga.

Lime experiments with cotton. Ala.

Residual effect of fertilizer for cotton. Ga.

Complete fertilizer experiments with cotton. Ala.

Rate of application of fertilizer to cotton. Ga.

A study to determine the cause of the apparent inconsistency in results obtained by chemical analysis and field tests, with reference to the potash requirements of cotton. Ga. .

Cultural experiments with cotton, including fertilizer tests, to determine the value of different mineral elements of plant food alone and in combination upon the yield and quality of cotton produced. Missouri.

Cotton variety and cultural tests. Ark.

Cotton culture and spacing tests. S.C.

Culture and field management of Egyptian cotton. Ariz.

Cotton cultural and harvesting experiments. Ark.

Methods of cotton culture in which thick and thin stands are compared: Effects of high, level, and low position of planted seed. Ala.

The time and method of thinning cotton. Tex.

Thinning experiments with cotton. Tenn.

Rate-of planting experiments with both cotton and corn. Tenn.

Tillage experiments with both cotton and corn, to determine the best depth of plowing and cultivation. Tenn.

"Cook's" system of growing cotton under local conditions, to verify the findings of other investigators who have reported on the Cook system. (Sugar Experiment Station) La.

Place variation with cotton. N.C.

Place effect studies with cotton: To study the place effect upon cotton qualities when seed of the same strain have been grown in different localities. N.C.

Cotton. (Cont.)

Effect of environmental factors upon time and rate of blooming in the cotton plant. Ga.

Effect of soil on lint of cotton. Ga.

Dropping of cotton bolls. Ark.

Relation of oil and nitrogen content of cottonseed to other characters. Ark.

Factors influencing the oil content of seeds. (Cotton). S.C.

The effect of conditions of harvesting and storage on the vitality of cottonseed. Ark.

Chemical changes which take place in cottonseed during growth and factors affecting same. Okla.

Cowpeas.

Cowpea variety tests. Ala., La.

Variety tests of cowpeas to determine the yield of different varieties of cowpeas, as shown by competitive tests. Okla.

Variety study of beans and cowpeas. Ark.

Tests of varieties of cowpeas for seed and hay. Md.

Cowpeas: Varieties, culture, and yields of hay and grain. Va.

Cowpea variety test for seed, yield of hay and resistance to disease. Ala.

A study of the adaptations of the important varieties and selections of cowpeas to the various soil types of the State. Missouri.

Cultural experiments with cowpeas. Missouri.

The effect of the cowpea crop on soil fertility with special regard to a wheat crop following and a corn crop following. A study of the nitrogen content of the soils is included. Tenn.

Green manuring experiments with cowpeas. To determine the effect of the cowpea crop when turned under, on nonlegumes immediately following. Tenn.

A comparison of cowpeas with soy beans. Ohio.

Comparison of cowpeas and soy beans for hay and seed production. Missouri.

Experiments in the associated growth of corn and cowpeas. Missouri.

To determine the best method of planting grain sorghums and cowpeas together. Okla.

Relation of cowpea growing to wheat production on continuously cropped land. Missouri.

Dry-land farming.

Investigations at dry farm stations (other than Nephi). Utah.

Nephi dry farm substation investigations. (Nephi). Utah.

Dry farm investigations to investigate crops suited to dry farming in high altitudes. Utah.

Dry land crops rotation and tillage methods experiments. (North Platte Substation) Nebr.

Variety tests, rate and date of seeding tests, methods of planting tests, inoculation of legumes, tests to determine whether dry farming to raise feed for stock is feasible. (Prescott Dry Farm and Sulphur Spring Valley Dry Farm) Ariz.

Study of relations of soil water and crop in respect to irrigation and dry farming supplemented by irrigation. N. Mex.

Field beans.

Field bean varieties. R.I.

Collecting and testing varieties of corn, small grains, beans, and soy beans, at the station and other points in the State in order to determine the measure of adaptability in each case to the local requirements. Mich.

Variety tests with field and garden beans and peas for the production of seed. (Aberdeen Substation). Idaho.

The production of a disease resistant field bean. Mich.

Production of field beans. W. Va.

Field peas.

Breeding of field and canning peas. Wis.

Breeding and improvement of field and garden peas. Idaho.

Classification studies with field and garden peas. Idaho.

A test of varieties of field peas. Ohio.

Variety tests with standard varieties of field and garden peas. (Sandpoint Substation) Idaho.

Variety tests with field and garden peas and beans for the production of seed. (Aberdeen Substation) Idaho.

Yield for seed and forage of Canadian field peas. (Union Branch Station) Oreg.

To determine the varieties of field and garden peas best adapted to irrigated and dry lands. (High Altitude Substation) Idaho.

Cultural experiments with field and garden peas. Idaho.

Flax.

Mendelian studies with flax. N.Y. Cornell.

Flax. (Cont.)

Flax breeding to improve our present bulk varieties by pure line selections.

The comparative study of a large number of these pure lines from the standpoint of yield and resistance to flax wilt. N.Dak.

Comparative study of the yielding capacities of different flax varieties for eastern North Dakota. N. Dak.

Date-of-seeding: To ascertain the best time to seed flax. N.Dak.

Varietal and cultural trials with fiber and seed flax. Oreg.

Tillage trials: A study of weeds in the field and their control as effected by intermittent tillage and date of seeding the flax crop. N.Dak.

Rate of seeding: To learn the best rate of seeding the crop. N. Dak.

A study of fertilizers and rate of seeding for flax. Del.

Flax rotation: To determine an effective rotation of crops for North Dakota, with special attention to the maximum production of flax on old land. Also rotations with emphasis on weed control, wilt control, and the conservation of moisture. N.Dak.

Determination of the causes of resistance of flax to wilt. N. Dak.

Forage crops.

Forage crop investigations. Minn.

Forage crop experiments. Ala.

Annual forage crops. Ark.

Cocperative experiments with cereal and forage crops. Ark.

Forage crop variety tests. (Valentine Substation) Nebr.

A varietal and cultural test of grain and forage crops and of grasses and miscellanecus crops. Ariz.

Variety tests of grain and forage. Mont.

Trials of introduced forage crops and grasses. Fla.

Comparative test with forage crops and grasses. S.C.

Observations with summer forage crops: To discover which are most promising for summer soiling. Mass.

Tests of forage crops, species and varieties as to value for soiling crops. (Astoria Branch Station) Oreg.

Forage crop investigation to develop pasture and soiling crops adapted to local conditions. Guam.

Development of a soiling crop system for summer soiling for dairy cows. 709 (Astoria Branch Station) Oreg.

Forage crops (Cont.)

Introduction and testing of miscellaneous forage crops. Idaho.

The introduction and testing of such crops as flax, buckwheat, sunflowers, corn, etc. for the production of grain or forage. (High Altitude Substation) Idaho.

A study of certain spring, summer, and fall-sown crops for forage, to determine if possible the relative adaptation and productivity of certain spring, summer, and fall-sown forage crops and the yield of several mixtures of these crops. Missouri.

Combinations of the following forage crops: Soy beans and cowpeas; soy beans and hairy vetch at several different rates of seeding; sweet clover and hairy vetch; cowpeas and sorghum; silage corn and soy beans; and flint corn and soy beans. Ohio.

To determine the best field practices for handling various forage crops, both for production of forage and production of seed. Wash.

Comparative tests of the annual forage crops for feed production using sunflowers, peas, and oats. Sudan grass, common millets, German millet, Siberian millet, Hungarian millet, Japanese millet, broom corn millet, hog millet, and pearl millet. Wyo.

A comparison of several varieties of grain and forage sorghum with a number of varieties of millet. Nebr.

Experiments in forage, green manure, and winter cover crops. To determine the best use of rye, winter vetch, sweet clover, the common clovers, and alfalfa for forage, green manures and winter cover crop purposes. Md.

Forage crop experiments to introduce and test leguminous plants as feed for animals. P.R.

Succession of crop trials with vetches and other forage crops. Oreg.

Artichokes as a silage and forage crop. Idaho.

The chemical analysis of forage crops and feeding stuffs. Wyo.

Grasses, general.

Grasses. (Valentine Substation) Nebr.

Miscellaneous grass investigations. Iowa.

Test of grasses to learn which are best suited to interior Alaska. Alaska.

Orchard grass selection and improvement. Idaho.

Grass and clover selection. W.Va.

Selection work with blue grass. To develop a more hardy strain adapted to this locality. Miss.

Grasses, general (Cont.)

A varietal and cultural test of grain and forage crops and of grasses and miscellaneous crops. Ariz.

Attempts to secure improved strains of timothy, clover, and other grasses. (Aroostook Farm) Maine.

Experiments with grasses to obtain valuable fodder grasses of stock raising purposes. Virgin Islands.

Yield tests of various grass and clover mixtures. N.Y. Cornell.

Nursery and seed trials with forage and seed grasses. Oreg.

Study of grasses and mixtures for meadow and pasture. Ark.

A comparison of 10 meadow grasses as regards yields, quality (including palatability) and permanency. Ohio.

Trials of introduced forage crops and grasses. Fla.

Comparative test with forage crops and grasses. S.C.

Grasses and legumes for hay and seed. Idaho.

To determine the best varieties of grasses and legumes for the production of forage and the most successful cultural practice. (High Altitude Substation) Idaho.

To ascertain what species of grasses and legumes are best suited to the peculiar conditions. Alaska.

Lawn and golf grasses. Permanent plats of different kinds and mixtures. R.I.

Lawn and golf grasses. Different manurial and fertilizer treatment as influencing especially the soil reaction and weed growth. R.I.

Grasses and grass-like plants: Economic study of. Ariz.

To prepare a manual of the wild and cultivated grasses of Maryland, by which they can be identified and their economic value determined. Md.

Hay.

Cereal hay investigations. Calif.

Hay curing studies. Iowa.

Methods of handling hay. Colo.

Comparative tests of short season hay crops. Mich.

Moisture changes in stored hay. Oreg.

Hay (Cont.)

Relation of hay volume to weight at different periods of stacking. Oreg.

Methods of increasing hay production in the Humboldt River Valley. A study of the effect of various methods of irrigation upon the quantity and quality of hay produced. Nev.

Hemp.

Development of a variety of hemp which will mature seed in Wisconsin. Adaptability to various types of soils. Wis.

Hemp marketing investigations. Ky.

Horse beans.

Nursery trials with vetch seedlings, new vetch varieties and horse bean varieties. Oreg.

Cultural trials with vetches showing promise and with horse beans. Oreg.

Johnson grass.

To determine a practical method of eradicating Johnson grass. N.Mex.

Kafir.

A study of inheritance of blackhull white kafir. Okla.

Cultural experiments with kafir corn, to find the effect of weeds and soil mulches on yield of kafir corn. Okla.

To determine the best rate to use in planting kafir. Okla.

Kudzu.

The measurement of increased fertility coming from plowing under a heavy crop of kudzu. Ala.

Legumes. (See also Alfalfa, clover, and sweet clover.)

Legumes. (Valentine Substation) Nebr.

Comparison trials with different legumes. Oreg.

Tests of varieties of legumes adapted to southwestern conditions, valuable for soil building purposes and for crops produced, including Canada field peas, Colorado stock peas, purple garbanzos, cowpeas, soy beans and alfalfa. Ariz.

Trials with various legumes for green dressing purposes, to find a legume resistant to caterpillar and fungus attacks which will be suitable for green dressing purposes. Virgin Islands.

Legumes (Cont.)

To ascertain what species of grasses and legumes are best suited to the peculiar conditions. Alaska.

To determine the best varieties of grasses and legumes for the production of forage and the most successful cultural practice. (High Altitude Substation) Idaho.

Legumes and grasses for hay and seed. Idaho.

Comparative use of legumes in rotation with corn, to secure comparative yields of corn grown after crops of cowpeas, soy bean, and velvet bean vines have been plowed under. (Sagar Experiment Station) La.

Effect of companion cropping of corn with legumes. S.C.

Nitrogen fixation by legumes. N.Y. Cornell.

Investigation into the form of nitrogen in the nodules of legumes. Tenn.

The composition of legumes (in Oregon). Oreg.

To determine the value of lime, gypsum, and sulphur as related to the growth of legumes. (Sandpoint Substation) Idaho.

Legume tests for grain purposes, to find a profitable legume to grow in St. Croix to provide grain for human consumption. Virgin Islands.

Leguminous food crops. Increase of food-producing crops of the Island. P.R.

Leguminous forage crops test to find legumes which can be successfully grown for forage. Alaska.

Botanical study of Lespedeza striata with reference to life history, habits, and improvement. Tenn.

Legumes, inoculation. (See also Soils-nitrogen assimilation)

Legume culture preparation. Idaho.

The inoculation of legumes. Iowa.

Production and distribution of bacteria for legumes. Missouri.

Effect of various factors on inoculation by legume bacteria. Wash.

Factors that control the infection of legumes by bacteria. Wash.

Millets.

A variety test of millets, including Sudan grass. Ohio.

Testing millets for yields of hay. Va.

Oats.

Inheritance in oats. S.C.

Inheritance studies with oats. Maine.

Mendelian studies with oats. N.Y. Cornell.

Oat breeding, to develop earlier and better varieties. Alaska.

Breeding oats. N.Y. Cornell.

Breeding experiments with oats. Ala.

Oat, rye, and barley breeding. Wis.

Selection and breeding of oats. La.

Isolation and propagation of pedigree strains of oats. (Highmoor Farm)
Maine.

Breeding oats for increased yield, greater strength of straw and rust
resistance. Iowa.

Oat improvement. Idaho.

A comparison of secondary with primary grains in pure-line strains of oats.
Ohio.

Hybridizing experiments with oats. (Aroostook Farm) Maine.

Hybridizing oats, with the object of combining the desirable qualities of two
varieties into a single strain and to eliminate as many of the bad characters
as possible. (Highmoor Farm) Maine.

Pure-line selections of oats. (Aroostook Farm) Maine.

Variety testing and head selection of oats for yield and early maturity. Wyo.

Variety tests and selections of hardy strains of winter oats. Md.

Investigations with winter oats, including variety tests and improvement:
To determine the adaptation of different standard varieties of winter oats
to various sections of the State; to improve the quality, to increase the
hardiness, and to increase the yield of winter oats by developing improved
strains through hybridization and selection. Missouri.

A test of commercial varieties of oats, also pedigreed varieties developed in
breeding work. Iowa.

A study of oat varieties with a view to their improvement. Penn.

Oat variety tests. (Aroostook and Highmoor Farms) Maine.

Oats (Cont.)

Oat variety tests. N.H., N.Y. Cornell, S.C., W.Va.

Variety tests with oats. La.

Extensive variety experiments with oats. Ala.

Variety tests of oats both from fall and spring seedlings. Ala.

Varieties of oats best suited to the climate. Alaska.

Varieties of oats grown in one-tenth acre plats, pure-line strains grown in one-hundredth acre plats, second-year pure-lines grown in eighteen-foot rows and duplicated; first-year pure-lines grown in head-row tests. Ohio.

Variety test of oats, to determine the yields of different varieties as shown by competitive tests. Okla.

A study of important varieties of oats for Missouri conditions. Missouri.

Variety tests of corn, oats, and soy beans. (Miami County Experiment Farm) Ohio.

Variety tests of corn, oats, and soy beans, and a rate of seeding test of corn. (Paulding County Experiment Farm) Ohio.

Testing varieties of corn, wheat, soy beans, and oats. Del.

Variety tests of corn, oats, and wheat. (Clermont County Experiment Farm and Findlay Test Farm) Ohio.

Variety tests of corn, wheat, and oats, and work with alfalfa. (Carpenter Test Farm) Ohio.

Variety trials with various farm crops, such as corn, wheat, oats, soy beans, vetch, etc. Tenn.

Variety trials with wheat, barley, and oats in plats. Calif.

Variety tests and cultural experiments with oats. Va.

Variety and cultural tests with winter and spring oats and barley. Ark.

Date-of-planting experiments with oats, wheat, and barley. Tenn.

Rate and time of seeding oats, wheat, and barley. Wyo.

The relation of rate of seeding oats to yield. Ohio.

Comparison of different rates of seeding oats as influencing the yield. Iowa.

The effect of the space between drill rows on yield of oats. Iowa.

Methods of planting oats after cotton: In open furrow, plowed under, seeded without preparation, etc. Ala.

Oats (Cont.)

Acid phosphate v. rock phosphate in moderate quantities and in heavy applications on oats, corn, and cotton. Ala.

The comparison of the cumulative effect of many years, of fall v. spring planted Red Rust Proof and Burt oats on yield, hardiness, earliness, and other qualities. Ala.

The relation of preparation of seed bed for oats, to yield. Ohio.

Effect of stage of maturity at harvest upon the germination power of oats, wheat, and barley. Wyo.

The relation of quality of seed of oats, as graded by the fanning mill, to yield. Ohio.

Species and varieties of oats tested for rust resistance and if found, to combine with other good characters of the most promising oats. (Highmoor Farm) Maine.

Varieties of soy beans and soy beans v. oats in rotation. Penn.

Observations on the stage of vetch and oat crop for silage. Oreg.

Oat disease nursery and hybridization. (Aberdeen Substation) Idaho.

Classification trials with oats. Oreg.

Farming investigations with seed oats. Iowa.

Acclimatization investigations with oats. Iowa.

Chemical tests of oats, corn, and rye. Minn.

Pasture.

Pasture and meadow crops. Ark.

Pasture experiments. Penn.

Pasture renovation. W.Va.

Variety tests of pasture grasses. (Hermiston Branch Station) Oreg.

Pasture trials on hill land. Oreg.

Sweet clover v. red clover as a legume for pasture purposes. Tenn.

Pasture and annual pasture crops, and the effects of top dressing. (Valentine Substation) Nebr.

Pasture experiment to determine the relative value of sweet clover, Sudan grass, Bermuda grass, alfalfa and oats as a pasture crop for Oklahoma. Okla.

Pasture (Cont.)

A test of Sudan grass as pasture for dairy cattle. Kans.

To work out a system of temporary pasture plants that will furnish continual grazing throughout the year. Miss.

Making of a permanent pasture by determining the combination of plants best suited to obtain a long period of uniform grazing and the cost and method of seeding and time necessary to make a permanent pasture under local conditions. Miss.

Grazing trial, to determine the carrying capacity of pasture grasses and the most economic season for and manner of grazing pastures. N.Dak.

Studies as to the best treatment and the value of pastures. N.Y. Cornell.

Plats of pasture grasses which receive different fertilizer treatments and from which the grass is clipped at stated intervals, then weighed and samples analyzed to ascertain relative value of grass from different plats. Va.

Yard manure, fertilizers, and lime on pastures. Penn.

An experiment on the improvement of pastures by fertilizer treatments. Conn. Storrs.

Studies of rotation grazing and various methods of treating native pastures. Kans.

Pasture conditions in West Virginia. W.Va.

Pasture survey, with attention given to the succession of vegetation in different methods of handling. Utah.

Pasture yields for lambs. Oreg.

A study of pasture values and pasture methods for horses, cattle, sheep, and swine. Kans.

Peanuts.

Peanut variety tests. Ala., Ga., S.C.

Peanut variety test for seed and for straw (hay). Ala.

Complete fertilizer experiments with peanuts. Ala.

Fertilizer experiments with peanuts. Fla.

Fertilizer tests with peanuts. Ga.

Rate of seeding peanuts and spacing. Ala.

Study of characters in peanuts and relation of these characters to production. Tex.

Peanuts (Cont.)

Investigations with Spanish peanuts. Missouri.

Experiments with Spanish peanuts, Sudan grass, and sorghum for forage.
Missouri.

Grazing peanuts with hogs v. direct selling of peanuts. Ala.

Potatoes, Irish.

Potatoes. (Valentine Substation) Nebr.

Potato investigations. Ark., Colo., Minn.

Potato breeding.--Selected seed raised by the U.S. Department of Agriculture
are tested under field conditions and grown for distribution to farmers.
(Aroostook Farm) Maine.

Potato breeding. Utah.

Irish potato breeding. W.Va.

Improvement of potatoes by selection. Wis.

Seed selection work with potatoes. Mont.

Irish potato seed improvement. La.

Potato breeding experiment, to determine a practical means of developing a
vigorous productive strain of early seed potatoes adapted to the State. A
study of the factors or agencies influencing or causing degeneracy of Irish
seed potato stock. Okla.

Potato selection for seed purposes. Nebr.

Potato investigations. Increase of improved stock seed for distribution.
(Aberdeen Substation) Idaho.

Tuber selection studies with potatoes. N.Y. Cornell.

Selection of high yielding strains of potatoes by the "tuber-unit" method. Wyo.

Potato investigations: Hill to row trial work. Oreg.

Hill selection of potatoes. Penn.

Varietal studies with potatoes. Iowa.

Variety tests of potatoes. N.Y. Cornell, Oreg., R.I., S.C., W.Va., Wis.

Variety tests of potatoes. Irrigated land. Mont.

Variety tests of nonirrigated potatoes. Mont.

Potatoes, Irish (Cont.)

- A study of the varieties of potatoes with a view to improving those best adapted to Pennsylvania conditions. Penn.
- Varieties of potatoes adapted to the Appalachian region of Virginia, also selections of promising strains by the "tuber-unit" method; fertilizer requirements; farm storage of potatoes. Cultural methods. Va.
- Strain tests of standard varieties of potatoes for different sections of New York State. N.Y. Cornell.
- Varietal and tuber unit tests of potatoes for yield. (Aberdeen Substation) Idaho.
- Variety test of potatoes, to determine the best varieties of potatoes for North Dakota. N.Dak.
- Potato variety tests.--To find the varieties best suited to Alaska. Alaska.
- Test of adaptability of seedling potatoes originated at Sitka and Matanuska Valley. (Matanuska) Alaska.
- To test the resistance of various varieties and strains of potatoes to various diseases. Maine.
- Variety and fertilizer tests of Irish potatoes. Miss.
- Fertilizer experiments with potatoes. Iowa, N.J., Wis.
- Source of seed and fertilizer tests with potatoes. Kans.
- A study of balanced and unbalanced fertilizers and the best proportion of the three fertilizer ingredients, ammonia, phosphoric acid, and potash. N.J.
- Fertilizer experiment with potatoes comparing different amounts of phosphoric acid on Caribou loam both with and without ground limestone. (Aroostook Farm) Maine.
- Effect of ground limestone in varying amounts, ranging from 1,000 to 4,000 lbs. per acre, on yields especially of the potato. (Aroostook Farm) Maine.
- Continuous fertilizer experiment to determine whether or not certain potato difficulties are associated with fertilizer practices. (Aroostook Farm) Maine.
- Mineral requirements of the potato plant. Md.
- Fertilizer and malnutrition experiments on potatoes. (Aroostook Farm) Maine.
- The spacing in potato plants: 6 by 35 in. v. 15 by 36 in. N.Y. State.
- Distance of planting potatoes on dry land. Mont.

Potatoes, Irish (Cont.)

Relation of yield of potatoes to time of planting. Iowa.

Potato culture experiments. W.Va.

Cultural and cutting trials for potatoes. Oreg.

Cultivation of nonirrigated potatoes. Kind and amount. Mont.

Mulching potatoes on irrigated land. Mont.

Comparison of straw mulch and cultivation in dry land potatoes. Mont.

Potato culture test to learn how to grow potatoes with best results. Alaska.

Effect of the distance apart in row and of missing hills on yield and quality of potatoes. Wyo.

Missing hills in potato fields. Their effect upon the yield. N.Y. State.

Thinning nonirrigated potatoes: Thinning to one stalk and various distances apart. Mont.

Thinning experiments with potatoes. Mont.

Potato production experiments. Idaho.

Potato production and prices. N.Y. Cornell.

Seed potato growing in high altitudes. Colo.

Study of conditions affecting the production of potatoes in Arizona. Ariz.

Seed potato production. Wash.

Investigations with seed potatoes. Missouri.

Potato seed source experiments. Iowa.

A study of the factors influencing seed production and tuber formation in Irish potatoes. S.C.

Physiological studies of seed potatoes. To determine the effect of the degree of maturity of the tuber on its vigor for seed purposes. N.J.

Determination of mercuric chlorid in solution used in treating seed potatoes. Idaho.

The handling of potato seed. To determine the effect of various ways of handling seed potatoes on the crop. N.Dak.

Size of potato seed piece. N.J.

Potatoes, Irish (Cont.)

Variation in the yield of potato plants from the two halves of the same tuber divided lengthwise. N.Y. State.

Effect of the size and portion of seed per tuber used on the growth and yield of the potato plant. Wyo.

Effect of different sized portions of seed at different moisture content on the early growth of the potato plant. Wyo.

Large y. small tubers of the same potato plant: A comparison of their value for seed purposes. N.Y. State.

Seed treatment of Irish potatoes. Ark.

Potato spraying experiments. Iowa.

A standard experimental plant for spraying potatoes. Penn.

The stimulating effect of Bordeaux mixture on plants, especially the potato plant. Vt.

Stimulating influence of Bordeaux mixture on potato plants. N.J.

The production of mosaic free seed potatoes. (Highmoor Farm) Maine.

Chemical and physical behavior of potatoes in the ground after death of vines. Md.

Potato identification trials. Oreg.

Yielding power of irrigated y. nonirrigated potatoes (Huntley). Mont.

Yielding power of irrigated y. nonirrigated potatoes (Judith Basin). Mont.

Irish potato storage and diseases. Tex.

Effect of various storage conditions on the quality and seed value of root crops, with special reference to potatoes. Md.

Strain tests and degeneration studies of potatoes. Conn. Storrs.

A study of degeneracy in potatoes rapidity, factors causing and means of control. Nebr.

Influence of climate upon the degeneration of potatoes: A comparison of northern-grown with southern-grown seed. N.Y. State.

Regeneration in potato tubers. Md.

A comparison of northern and locally grown "Triumph" Irish potato seed. La.

Reason for the failure of potato tubers to develop properly in parts of New Mexico. N.Mex.

Potatoes, Irish (Cont.)

Relation between the nature of the growth of the potato plant to yield and quality. Wyo.

Potatoes on alfalfa sod. N.J.

Survey of potatoes (a) commercial and (b) seed crop. N.J.

Range studies. (See also Animal Husbandry-Cattle, grazing and range experiments)

A study of range improvement through fencing and plant introduction. Ariz.

Range improvement. Colo.

Maintenance of forage supply in the mountain regions of California. Calif.

Plains crops and management. Colo.

Revegetation of depleted ranges. The reestablishment of native range forage plants. A study of methods of increasing the carrying capacity of sheep and cattle ranges. Nev.

Range survey. Utah.

Miscellaneous observations in connection with range problems. Oreg.

White sage studies. Nev.

Residual effect of crops. (See also Field crops, rotations)

Effects of certain crops on soil fertility. Plots planted to various crops and combinations of crops, following by wheat as an indicator of the fertility. Miss.

To study effect and to eliminate any bad effects on growing tobacco after cowpeas. N.C.

To determine the effect of cropping systems upon the production of succeeding crops. Wash.

Effect of different summer legumes and crimson clover on yield of cotton and oats in a two-year rotation of cotton, legumes, and oats. La.

Extent and nature of influence exerted upon plants by previous growth of other kinds of plants. R.I.

To determine the effect on yield of corn following a crop of alfalfa; to secure the best method of growing and handling, and especially the effect of drainage on the life of alfalfa. (Sugar Experiment Station) La.

Effect of soy beans on yield of cotton and corn in a two-year rotation of corn and cotton. La.

Residual effect of crops. (Cont.)

A study of the relative yields of hog feed and the relative effects of chufas, sweet potatoes, cowpeas, soy beans, etc. on a succeeding crop of cotton. Ala.

The comparative after-effects of various legumes and of grass as shown by succeeding corn crops. Tenn.

The effect of the cowpea crop on soil fertility with special regard to a wheat crop and a corn crop following. A study of the nitrogen content of the soils is included. Tenn.

Crop relations, comparative effect of tobacco and other crops on yields of succeeding crops. Md.

Rice.

Variety tests with rice. (Rice Experiment Station, Crowley) La.

Variety and fertilizer tests with rice, to determine the most desirable variety or varieties of rice for Guam and to study the effect of different fertilizing constituents upon rice production on the principal types of Guam soils. Guam.

Fertilizer experiments with rice, including sources of nitrogen and phosphoric acid, and applications of lime, potash, manure, and complete fertilizers. (Rice Experiment Station, Crowley) La.

Fertilizer experiments with rice. Tex.

Irrigation experiments with rice, including date and depth of application and daily loss of water at different depths. (Rice Experiment Station, Crowley) La.

Duty of water in rice irrigation in California. Calif.

Methods of cultivation of rice, including date and rate of seeding, manner of seeding, and character of seed. (Rice Experiment Station, Crowley) La.

Improvement of the rice industry of the Island, the study of the rice plant, and to give this crop a place in a system of rotation with cane and legumes on the cane lands of the Island. P.R.

The optimum reaction for rice culture: To study the critical hydrogen-ion concentration in rice culture and the effect of the use of different fertilizers on the reaction of the medium. P.R.

Effect of environment on the development of the rice plant. Tex.

Rotations.

Rotation experiments. (Davis) Calif., (Burns Branch Station) Oreg.

Crop rotation investigations. Minn.

Rotations. (Cont.)

Three year rotation experiment. La.

A series of rotative cropping experiments. Ohio.

A comparative study of various crop rotations. Tenn.

Rotation and fertility investigations. (University Farm and Sandpoint Substation) Idaho.

Fertilizer-rotation experiments. Ala.

Combination rotation and fertilizer experiment. Ark.

Crop rotation and fertilizer experiments. Nebr.

Rotation and fertility tests (Greenville) Utah.

Rotation, fertilizer, and soil improvement investigations: A study of practical rotations in various agricultural regions of the State. Tex.

Comparative use of legumes in rotation with corn, to secure comparative yields of corn grown after crops of cowpeas, soy bean, and velvet bean vines have been plowed under. (Sugar Experiment Station) La.

Three-year rotation of grain, alsike clover, and beets. Oreg.

A series of rotations of 25 years duration in which several cropping systems are compared, embracing summer and winter legumes v. no legumes. Ala.

Clover each four years in rotation with grain, potatoes, and beets, and each fifth year a block of alfalfa. Oreg.

Four year rotation with peas and oats, timothy, and clover. (Astoria Branch Station) Oreg.

Crop rotation experiments, including spring wheat, barley, potatoes; field peas continuously; spring wheat, corn, and spring barley; winter wheat and summer fallow; and spring wheat, barley, and corn. (Moro Branch Station) Oreg.

Fertility investigations with two-year crop rotation; including the effect of manure and crop residues; the effect of rock phosphate with manure (live stock system); and the effect of rock phosphate with crop residues (grain system). Iowa.

Fertility investigations with three-year crop rotation, including the effect of manure and crop residue; the effect of rock phosphate with crop residues (grain system); and the effect of rock phosphate with manure (live stock system). Iowa.

Rotations. (Cont.)

Fertility investigations with four-year crop rotation, including the effect of various applications of manure and of crop residues; the effect of rock phosphate, bone meal, acid phosphate, potassium salts, and complete commercial fertilizers with manure (live stock system); the effect of the same fertilizers with crop residues (grain system, no manure); the applications of complete commercial fertilizers broadcasted or applied in the hill; and the effect of limestone and air-slaked lime. Iowa.

Fertility investigations with five-year crop rotation, including alfalfa; the effect of manure and crop residues; the effect of rock phosphate and acid phosphate with manure (live stock system); and the effect of phosphates with crop residues (grain system). Iowa.

A rotation test involving the growing of ten different field crops in continuous culture; in ten different 2-year rotations; in ten 3-year rotations; in ten 4-year rotations; and ten 5-year rotations, the average annual treatment of the soil with respect to lime, fertilizers, and manures being the same in the continuous culture and each rotation. Ohio.

Rotation of crops, including continuous cropping of corn, cotton, and oats, with two, three, and four-year rotations with legumes planted in and between regular crops. Miss.

A study of various crop rotations: Four-year and two-year rotations. Del.

Rotation experiments, including two-year with soy beans, two-year with pasture, and four-year with oats, corn, and soy beans. (Rice Experiment Station, Crowley) La.

Potatoes, rye as green manure for squashes, onions, wheat and rowen, grass. Fertilizer used in most cases, comparison of manure with fertilizer for corn. Different amounts of fertilizer elements and of fertilizer compared. R.I.

Corn, potatoes, rye and rowen, one to three years of grass, including one rotation with and one without legumes. R.I.

Potatoes, corn with grass and clover seeded in it and left to grow five years subsequently. R.I.

Silage corn with grass and clover seed in it, grass, oat, and pea hay followed by rutabagas; cow manure with straw bedding v. planer shavings bedding, the latter with different amounts of phosphorus and of potassium, all compared with fertilizer alone. R.I.

A study of various rotations on continued production by soils of different types. N.Y. Cornell.

To determine the proper methods of fertility treatment for a rotation of tobacco, soy beans, wheat, and clover grown on a Huntington silt loam soil. W.Va.

Rotations. (Cont.)

To determine the advisability of growing alfalfa, corn, and annual legumes in a rotation on bottom land. Okla.

Rotation of crops for Colorado. Colo.

Flax rotation, to determine an effective rotation of crops for North Dakota, with special attention to the maximum production of flax on old land. Also rotations with emphasis on weed control, wilt control, and the conservation of moisture. N.Dak.

Studies of crop rotations for northern Wisconsin. Wis.

Crop rotation and soil management experiments on the college farm. Iowa.

Where fertilizers may be applied to best advantage in a given rotation, and whether in small quantities frequently or large quantities less frequently. Va.

Crop rotation and fertilizer studies, to determine the relative merits of several different crop rotations and to compare different systems of fertilization, including commercial fertilizers and farm manures. Ind.

Tests of crop rotations, commercial fertilizers, and manure. Kans.

Studies in crop rotations. To study the most profitable point in the rotation to apply the usual fertility measures practiced by Maryland farmers. Md.

A rotation comparing heavy applications of phosphoric acid, potash, and nitrogenous fertilizers with moderate amounts of these plant foods for cotton, corn, oats, and legumes grown in rotation. Ala.

Manure crop rotation plats. (No. Louisiana Expt. Sta.) La.

Study of the place in rotation for applications of manure. Conn. Storrs.

Experiments to determine the best place for the application of farmyard manure in a standard five-year crop rotation. Tenn.

Rotations: A comparison of the value of green manures, barnyard manures, and summer fallow, using sweet clover and rye as green manures. Wyo.

A study of the comparative returns from manure applied immediately prior to (a) the seeding of wheat and (b) the seeding of cowpeas in a cowpea-wheat rotation. Tenn.

A comparison of the use of clover for hay with its direct use as a fertilizer in a 3-year rotation of corn, wheat, and clover. And when used as a fertilizer, a further comparison of plowing it under at different times, followed by different treatments. Ohio.

Rotations. (Cont.)

Fertilizer and lime tests in a rotation of cotton and corn. Ga.

A study of the effects of different fertilizers, lime and plaster, and different amounts and sources, on the production of corn, oats, and mixed clover and timothy in rotation. Penn.

Comparison of the economic value of several dairy farm rotations. Conn. Storrs.

To compare the effect of grain, live stock, and diversified farming systems on kafir, wheat, and annual legumes in rotation. Okla.

To determine the comparative effect of live stock, grain, and commercial fertilizer systems on the yields of crops in rotation. Okla.

Rotation experiment, to compare yields of crops grown in one, two, and three-year rotations with and without cover crops. N.C.

The influence of rotations upon the maintenance of soil fertility. S.Dak.

Fertility experiments in a five-year rotation. Tenn.

Crop rotation and fertilizer experiments, to determine the influence of various rotations maintaining soil fertility. Missouri.

Crop rotation for fertility maintenance. (Hermiston Branch Station) Oreg.

Fertility investigations with continuous cropping (corn). The effect of manure and lime. Iowa.

Effect of various crop rotations on the physical character of the soil. Missouri.

The protein content of wheat and nitrogen content of the soil, when cropped continuously to wheat and when cropped under a definite rotation scheme. Idaho.

Rye.

Rye. (Valentine Substation) Nebr.

Breeding rye. N.Y. Cornell.

Breeding work with rye. S.C.

Rye, oat, and barley breeding. Wis.

Rye variety tests, to find a winter rye which shall be entirely hardy in Alaska. Alaska.

Variety test of rye. Mass.

Rye. (Cont.)

A test of different varieties of rye with ordinary commercial rye for seed, etc. Ala.

Variety tests and cultural experiments with rye. Va.

Variety and cultural tests with wheat and rye. Ark.

Chemical tests of oats, corn, and rye. Minn.

Silage crops. (See also Feeding stuffs and Animal nutrition-silage)

Variety tests of silage crops. (Hermiston Branch Station) Oreg.

Comparative tests of individual species and combinations for silage. (Astoria Branch Station) Oreg.

Silage corn variety tests. Miss.

Corn variety trials for silage. Oreg.

A test of 14 varieties of corn for silage. Ohio.

Variety tests of corn for the production of silage. (Aberdeen Substation) Idaho.

Silage corn tests, to determine the relative yield, maturity, and adaptability of the varieties in the different sections of the State and to compare them with other local or favorite varieties. N.H.

Cultural tests of corn for silage production. Idaho.

Early planting of silage corn. N.H.

A comparison of yield of the ranker growing varieties of sorghum with standard varieties of corn for silage. Ala.

A study of silage corn and supplementary silage crops, especially sunflowers and soy beans. N.Y. Cornell.

Sunflowers as a silage crop. (Union Branch Station) Oreg.

Sunflowers as a silage crop for Wisconsin. Wis.

Improvement of sunflowers for silage production by selection and breeding. Idaho.

Rate of seeding sunflowers as related to yield of silage. (Aberdeen Substation) Idaho.

A comparative test of growing corn and sunflowers for silage. Penn.

Silage crops. (Cont.)

Sunflowers: To compare them with corn as a silage crop, noting insect injuries, drought resistance, and tonnage. (Valentine Substation) Nebr.

Silage investigations: Observations on the stage of oat and vetch crop for silage. Oreg.

A test of the practicability of growing soy beans with corn for silage. Penn.

A comparison of different varieties and different methods of planting soy beans in corn for silage and for hogging down. Iowa.

Soy beans, yellow, as late as will produce viable seed, suitable for silage. R.I.

Artichokes as a silage and forage crop. Idaho.

Rape as material for silage. Iowa.

Chemical composition of silage crops. Minn.

Sisal.

Sisal growing, to find a profitable crop in very dry lands now unproductive. P.R.

Sorghums.

Sorghum variety tests. Miss., S.C.

A comparison of varieties of sorghum for yield of fodder. Iowa.

A comparison of the leading varieties of sorghum both for green and dry forage. Ala.

A study of the varieties and methods of culture of Indian corn and the various sorghums. Ariz.

A comparison of the most important grain sorghums with corn for grain and forage production. Missouri.

Experiments with sorghum, Sudan grass, and Spanish peanuts for forage. Missouri.

A comparison of yield of the ranker growing varieties of sorghum with standard varieties of corn for silage. Ala.

Selective inbreeding in grain sorghums and the influence of environment on the plant. Tex.

Variety tests of grain sorghums, to determine the yields of different varieties as shown by competitive tests. Okla.

Sorghums. (Cont.)

To determine the best method of planting grain sorghums and cowpeas together. Okla.

Chemical study of the grain sorghums. Okla.

Sorghum breeding for high sugar content. Iowa.

Improvement of saccharin sorghum by selection. Wis.

Variety tests of sweet sorghums. To determine the yields of different varieties of sweet sorghums as shown by competitive tests. Okla.

Tests of varieties of sorghum for sirup. Ala.

A comparison of varieties of sorghum for yield of sirup. Iowa.

A study of the formation of sucrose in the sweet sorghums, to determine which variety produces most sucrose per acre, in which variety its production is most rapid, at what stage of growth it has the highest content, the variety with the highest coefficient of purity in the juice and effect of removal of the green head on sucrose in stalk. Okla.

Soy beans.

Soy bean breeding. Ind.

Breeding and cultural work with soy beans. Idaho.

Soy bean breeding and cultural studies. Wis.

Soy bean breeding for varieties especially suited to Iowa conditions. Iowa.

A plant-row test of selected individuals of soy beans. Ohio.

Selection and varietal trials with soy beans. Oreg.

Soy bean variety tests. Ala., Ga., La., Miss., W.Va.

Variety tests of corn, oats, and soy beans (Miami County Experiment Farm) Ohio.

Variety tests of corn, oats, and soy beans and a rate of seeding test of corn. (Paulding County Experiment Farm) Ohio.

Collecting and testing varieties of corn, small grains, beans, and soy beans, at the station and other points in the State in order to determine the measure of adaptability in each case to the local requirements. Mich.

Testing varieties of corn, wheat, soy beans, and oats. Del.

Variety tests of corn and soy beans and a rate of seeding test of corn. (Hamilton County Experiment Farm) Ohio.

Soy beans. (Cont.)

Variety trials with various farm crops, such as corn, wheat, oats, soy beans, vetch, etc. Tenn.

A test of promising commercial varieties of soy beans. Iowa.

Strain tests of soy beans. Conn. Storrs.

A test of varieties of soy beans grown for seed and for hay. Ala., Ohio.

Soy beans: Varieties, culture, and yields of hay and grain. Va.

Soy bean investigation: Adaptation of imported varieties, selection of superior types, tests of yields for hay and seed of varieties. Md.

A study of the adaptation of the important varieties and selections of soy beans to the various soil types of the State. Missouri.

Rate-of-planting experiments with both soy beans and corn. Tenn.

The time of seeding standard varieties of soy beans as influencing the yield of hay and of seed. Iowa.

Methods of seeding soy beans as influencing yield and freedom from weeds. Iowa.

Rate of seeding and cultural methods in the production of soy beans. Ind.

A test of rate of seeding, ranging from one to eight pecks per acre, with soy beans. Ohio.

Rate of seeding soy beans for maximum hay production and for maximum seed production. Iowa.

Comparison of different methods of cultivating soy beans. Iowa.

Cultural experiments with soy beans, including time of seeding, methods of seeding, and rate of seeding. Missouri.

Soy beans, yellow, as late as will produce viable seed, suitable for silage. R.I.

Growing soy beans in conjunction with corn, to determine the influence of associated growth of soy beans on the yield of corn, when the two are planted together at the time the corn is planted. Ill.

A test of the practicability of growing soy beans with corn for silage. Penn.

Investigation of associated growth of soy beans and corn. Wis.

A comparison of different varieties and different methods of planting soy beans in corn for silage and for hogging down. Iowa.

Soy beans. (Cont.)

A comparison of soy beans with cowpeas. Ohio.

Comparison of soy beans and cowpeas for hay and seed production. Missouri.

Varieties of soy beans and soy beans y. oats in rotation. Penn.

A study of silage corn and supplementary silage crops, especially sunflowers and soy beans. N.Y. Cornell.

Soy bean inoculation. N.H.

Effect of inoculation of soy bean seed on nitrogen content of plants. Wis.

Soy bean oil work, to select a high yielding strain of soy beans that will have a high oil content. N.C.

Soy bean studies, including usefulness of soy beans for feeding purposes in Iowa. Feeding value at different stages of growth, composition at different stages of growth, its use for hay and relative feeding value as compared to ordinary hay. To work out the value of soy beans used as a grain ration and to investigate various possible uses. Iowa.

Sudan grass.

Sudan grass seed studies and breeding. Iowa.

A variety test of millets, including Sudan grass. Ohio.

Methods of seeding Sudan grass. Iowa.

Rate of seeding Sudan grass. Iowa.

Sudan grass seeded at different rates, ranging from 5 to 30 lbs.; drilled in rows 8 to 32 in. apart and cut at different stages of growth. It is also being compared with German millet. Ohio.

Sudan rate and date test, to determine the best rate and date, both in rows and close drilled, to seed Sudan grass. Okla.

Date, rate, and methods of seeding Sudan grass. Ind.

Cultural experiments with Sudan grass. Idaho.

A study of the cultural requirements and adaptation of Sudan grass, to determine the adaptation of Sudan grass and ascertain the most satisfactory cultural practices. Missouri.

Method of cutting and curing Sudan grass for hay. Iowa.

Hay harvesting of Sudan grass, to determine at what stage of its growth it is best to cut Sudan grass for hay. Okla.

Sudan grass. (Cont.)

The influence of the number of cuttings and the time of cutting on the quality and yields of Sudan grass hay. Iowa.

Sudan grass for hay and its mixtures with cowpeas. Ala.

Value of Sudan grass as forage crop for Wisconsin. Wis.

Experiments with Sudan grass, sorghum, and Spanish peanuts for forage. Missouri.

A test of Sudan grass as pasture for dairy cattle. Kans.

Sudan grass, its effect in the rotation. Iowa.

Sugar beets.

Sugar beet breeding. Utah.

Selection and improvement of sugar beets for high sugar content and the production of seed of these selections. (Aberdeen Substation) Idaho.

A variety test of mangels and sugar beets. Ohio.

Sugar beet studies: To determine best date of spring planting and best date of fall planting; to compare the furrow y. flooding method of irrigation; and to compare effect on germination of irrigating before planting and irrigation after planting. N.Mex.

Commercial beet seed production. Utah.

Commercial growing and breeding of sugar beet seed in California. Calif.

A study of the sugar content of sugar beets when grown from high sugar mother beets of high sugar content. (Aberdeen Substation) Idaho.

Sugar content and purity of sugar beets. Minn.

The encouragement of sugar beet culture in North Carolina. N.C.

Sunflowers.

Improvement of sunflowers for silage production by selection and breeding. Idaho.

Tests of adaptation and use of sunflowers and disease-resistant strains. Mich.

Rate of seeding sunflowers as related to yield of silage. (Aberdeen Substation) Idaho.

Cultural experiments with sunflowers. Idaho.

Sunflowers. (Cont.)

Sunflowers as a silage crop. (Union Branch Station) Oreg.

Sunflowers as a silage crop for Wisconsin. Wis.

Study of the sunflower, to determine nutrient value, ash constituents and other characteristics of the sunflower plant at different stages of growth. N.Dak.

Sunflowers: To compare them with corn as a silage crop, noting insect injuries, drought resistance, and tonnage. (Valentine Substation) Nebr.

A comparative test of growing corn and sunflowers for silage. Penn.

A study of silage corn and supplementary silage crops, especially sunflowers and soy beans. N.Y. Cornell.

Sweet clover. (See Clover, sweet)

Sweet potatoes.

Sweet potato variety tests. Ala., S.C.

Varieties of sweet potatoes best suited to the section and also a study of the control of various diseases. Okla.

Variety and fertilizer tests with sweet potatoes. Keeping qualities of the different varieties. Miss.

To learn best varieties and cultural methods for sweet potatoes, yautias, and dasheens for Porto Rico. P.R.

Fertilizer experiments with sweet potatoes. Ala., Fla., Ga., S.C.

Sweet potato manuring tests to determine value of farmyard manure in the culture of sweet potatoes. Virgin Islands.

Sweet potato curing. Ala.

A study of cultural and storage methods of the sweet potato. Ariz.

To determine the influence of certain fertilizer elements and their combinations on the keeping qualities of sweet potatoes in storage. Ga.

A study of the influence of the time of digging sweet potatoes upon keeping qualities. S.C.

Nature of the physiological changes in stored sweet potatoes. Ala.

Sweet potato storage and diseases. Tex.

The economic side of marketing and storing sweet potatoes. Tex.

Timothy.

Breeding timothy. N.Y. Cornell.

Timothy breeding for increased yield and improved quality. Iowa.

Timothy selection. N.H.

Timothy improvement. Penn.

The proportion of timothy in clover and timothy mixtures resulting from seeding the latter in wheat at different times. Ohio.

Tobacco.

A study of the problems of inheritance of character in tobacco. Calif.

Sterility of hybrids of Nicotiana. Penn.

Breeding investigations with tobacco. Conn. State.

Breeding work in tobaccos and distribution of seed of new kinds. Ohio.

Maryland export tobacco investigations, to improve by breeding and selection, to determine the best fertilizers, best systems of crop rotation, methods of growing, curing and handling, and control of important diseases. Md.

Tobacco experiments: Seed selection. Penn.

Tobacco experiment to test Davis Zimmer hybrid. Penn.

To study the different varieties of tobacco with respect to yield and commercial quality. N.C.

Variety test of cigar filler tobacco. Penn.

Tobacco variety and curing tests. W.Va.

Variety, fertilizer, and insect enemy studies of tobacco, to determine the most desirable variety or varieties of tobacco for Guam; to study the insect pests and determine the best methods for their destruction; and to determine the fertilizer requirements of tobacco on the different soil types of Guam. Guam.

Fertility experiments with tobacco, to determine the effects of various fertilizers, used singly and in combination, on the yield and quality of the tobacco. Tenn.

Fertilizer tests, to determine the correct amount, right proportions, and most efficient carriers of plant food materials for tobacco in rotation. N.C.

Effect of liberal humus supply on bright tobacco. To study effect of humus on quality of tobacco. N.C.

Tobacco. Cont.)

Special potash experiments with tobacco, to note effect of the addition of different kinds and amounts of potash for tobacco. N.C.

Closer planting combined with more intensive fertilizing, to study effect on yield and quality of tobacco by planting at different thicknesses and fertilizing more heavily. N.C.

Effect of leaving tops on plants on the quality of cigarette tobacco, to determine whether a milder and more desirable cigarette cutter can be produced by leaving the plants untopped as is done with Turkish tobacco. N.C.

Effect of various systems of cropping on the yield and quality of dark leaf tobacco. Tenn.

Growing tobacco continuously on blue grass soil. Ky.

Study of the effect on quality and yield of tobacco after other crops and maintaining the humus supply of the soil. N.C.

Tobacco seed production. Md.

Permanent tobacco seed bed. The practicability of maintaining the seed bed in the same place. N.C.

Crop relations, comparative effect of tobacco and other crops on yields of succeeding crops. Md.

Turnips.

Variety test of turnips. Mass.

Variety tests, general.

Limited variety test. (Market Garden Field Station, Lexington) Mass.

A varietal and cultural test of grain and forage crops and of grasses and miscellaneous crops. Ariz.

Cooperative variety trials at the substations and other locations in the State. Minn.

Variety trials with various farm crops, such as corn, wheat, oats, soy beans, vetch, etc. Tenn.

Testing varieties of farm crops, to determine the relative merits of all the more or less promising varieties of farm crops that can be found, and which may be of interest to Indiana agriculture. Ind.

Variety performance of farm grains in the field. To determine the best variety of farm crops for different sections of Illinois. Ill.

Variety trials of various farm crops. Tenn.

Velvet beans.

Velvet bean variety tests. Ala., Ga., La., S.C.

Velvet beans (various species and varieties) for seed yield, time of maturing seed, etc. Ala.

A chemical study of the velvet bean. Ala.

A biological study of the nutritive value of the velvet bean. Ark.

Vetch.

Variety tests with vetch. Miss.

Variety trials with various farm crops, such as corn, wheat, oats, soy beans, vetch, etc. Tenn.

Testing vetches for yields of hay. Va.

Testing several new kinds of vetches for winter hardiness and resistance to diseases. Ala.

Mixtures of different kinds of vetches with and without small grains for hay and for winter cover crops. Ala.

Cultural trials with vetches showing promise and with horse beans. Oreg.

Nursery trials with vetch seedlings, new vetch varieties and horse bean varieties. Oreg.

Succession of crop trials with vetches and other forage crops. Oreg.

Observations on the stage of oat and vetch crop for silage. Oreg.

Wheat. (See also Foods and Human nutrition,--Milling and baking.)

Mendelian studies with wheat. N.Y. Cornell.

The possibility of the inheritance of variations induced by differences in nutrition in wheat. N.Y. Cornell.

Inheritance of stem rust resistance of wheat. N.Dak.

Wheat breeding. Ind., N.Y. Cornell, Wis.

Breeding work with wheat. S.C.

Wheat breeding, to develop, if possible, both spring and winter varieties which shall be suited to the Alaska climate. Alaska.

Breeding wheat for increased yield, better quality and hardiness. Iowa.

Cereal breeding investigations, primarily with wheat. (Moro Branch Station) Oreg.

Wheat. (Cont.)

The production of a wheat variety combining the stem rust resistance (and baking qualities) of Kota with certain desirable characters of other varieties such as strength of straw and lack of awns of Marquis. N.Dak.

Wheat breeding investigations, including the improvement of commercial varieties by the pure-line method of breeding and hybridization and subsequent selection. To improve quality and increase yield of winter wheat for Missouri. Missouri.

Wheat improvement. Idaho, Penn.

Improvement of wheat by hybridization and selection. Tenn.

Pure-line selection and hybridizing experiments with wheat, in order to secure a strain that will maintain its hard qualities under Maine conditions. (Aroostook Farm) Maine.

Studies of pure-lines in wheat of the Kubanka and Kota varieties, to obtain an improved strain (pure-line) or mixture of such as an improvement over the parent bulk variety and to obtain data upon the amount of correlation and variation which may exist among the various pure lines of a variety. N.Dak.

Work in winter wheat, to test hardiest strains of winter wheat and by breeding these to develop new strains sufficiently hardy for North Dakota conditions. N.Dak.

A study of the varieties of wheat with a view to their improvement. Penn.

Wheat variety tests and improvement by selection and breeding. Md.

Variety testing and head selection of wheat for yield and early maturity. Wyo.

Variety tests of wheat. Ala., Mass., S.C., W.Va., N.Y. Cornell.

Variety tests of wheat to determine the yields of different varieties of wheat as shown by competitive tests. Okla.

Variety tests of wheat. Varieties, many of which are pure-line selections, grown in tenth-acre plats; pure-line strains grown in one-hundredth acre plats; second year pure-lines grown in eighteen-foot rows; first year pure-lines grown in head-row tests. Ohio.

Variety tests to find an early spring wheat and a hardy winter wheat. Alaska.

A test of commercial varieties of wheat, also pedigreed varieties developed from the breeding work. Iowa.

A variety test of wheat, in cooperation with the experiment stations of North Carolina, South Carolina, and Georgia, in which the most promising

Wheat. (Cont.)

varieties found by the different stations are being tested under uniform methods at each station. Ala.

A survey of varieties of winter wheat in Pennsylvania. Penn.

A study of the adaptations of the important varieties of wheat to Missouri conditions. To determine the adaptations of varieties of wheat to various soil types of the State. Missouri.

An investigation of the "Hessian fly resistant" qualities of different varieties of wheat. Missouri.

Variety tests and cultural experiments with wheat. Va.

Testing varieties of corn, wheat, soy beans, and oats. Del.

Variety tests of corn and wheat and alfalfa work. (Germantown Test-farm) Ohio.

Variety tests of corn, oats, and wheat. (Clermont County Experiment Farm and Findlay Test-farm) Ohio.

Variety tests of corn, wheat, and oats and work with alfalfa. (Carpenter Test-farm) Ohio.

Variety trials with various farm crops, such as corn, wheat, oats, soy beans, vetch, etc. Tenn.

Variety trials with wheat, barley, and oats in plats. Calif.

Variety and cultural tests with wheat and rye. Ark.

A comparison of different methods of seeding wheat. Iowa.

Rates and methods of seeding wheat. Ind.

The relation of rate of seeding, ranging from three to ten pecks, to yield of wheat. Ohio.

Rate and time of seeding wheat, oats, and barley. Wyo.

The relation of early and late seeding to yield of wheat. Ohio.

A comparison of different rates of seeding wheat. Iowa.

Rate and date of sowing experiments, primarily with wheat. (Moro Branch Station) Oreg.

Date-of-planting experiments with wheat, oats, and barley. Tenn.

Rate, date, and depth of seeding winter wheat on dry land. (High Altitude Substation) Idaho.

Wheat. (Cont.)

Preparing seedbeds for wheat in different ways; plowing at different dates, disking and plowing, and disking only. Ohio.

Differences in the extent to which different types of wheat respond to various kinds and quantities of plant food. Del.

Salt requirements of Marquis wheat. Iowa.

Cultural experiments with wheat. Missouri.

Wheat seedbed preparation. Kans.

Test of furrow method of seeding wheat. Kans.

Mulching winter wheat with different amounts of straw per acre during the late fall or early winter. Ohio.

Continuous culture of wheat, to determine the difference as observed in yields between continuous culture and crop rotation with special reference to the leading crops of Oklahoma and under Oklahoma conditions, wheat being the index crop. Okla.

Clipping winter wheat in the spring at different heights when it has attained a growth of 8 to 10 in. Ohio.

Effect of stage of maturity at harvest upon the germination power of wheat, oats, and barley. Wyo.

Date of harvesting v. germination of wheat. Why weak germination occurs soon after threshing and how long this continues. Mont.

Influence of environment upon the development of the wheat plant. Missouri.

Relation of the composition of wheat to soil types. Wash.

The effect on the yield of wheat of seeding timothy in wheat, and the comparative effect of fall and spring seeding. Ohio.

Relation of cowpea growing to wheat production on continuously cropped land. Missouri.

Relation between physical characters, chemical composition and milling and bread-making quality in wheat. Maine.

Comparative study of Durum, Poulard and bread wheats. Ariz.

Yield, composition, and quality of Montana wheats. Chemical analyses, milling and baking tests. Mont.

A test of different grades of wheat as separated by the ordinary fanning mill. Ohio.

Wheat. (Cont.)

Life history and relations of imperfect fungi to soil and seed in wheat cropping. N.Dak.

The protein content of wheat and nitrogen content of the soil when cropped continuously to wheat and when cropped under a definite rotation scheme. Idaho.

Soluble proteids of wheat. Mont.

The effect of available nitrogen upon the protein in wheat. Idaho.

A study of the factors which influence the protein content of the wheat kernel. Idaho.

Influence of cultivation on nitrogen content and yield of wheat. Wash.

Relation of nitrogen to hardness and gluten content of wheat. Oreg.

Sterile spikelets in wheat. Del.

Cytological basis for cross sterility in wheat. Maine.

Analysis of the cellular structure of wheat hybrids, to discover the reason for the degeneration of hybrid germ cells in sterile plants. (Highmoor Farm) Maine.

Classification and nursery trials with winter and spring wheats. Oreg.

Yellow-berry in Montana wheat. Cause and control. Mont.

Yellow-berry in wheat. The cause of yellow-berry in Turkey Red wheat in the Columbia Basin. Oreg.

Tests (chemical) of quality of varieties of wheat grown by the section of field crops. Minn.

Tests (chemical) of quality of strains of wheat from the plant breeding nursery. Minn.

Tests of quality of disease resistant hybrid wheats. Minn.

Miscellaneous.

Seeding in oats with clovers v. seeding with clovers, alfalfa, and orchard grass. R.I.

Root crop tests, including turnips, rutabagas, and mangels. N.H.

Effect of permanent cropping, including corn and cowpeas, corn and soy beans, corn and velvet beans, cotton and Lespedeza striata. (Japan clover) La.

Miscellaneous. (Cont.)

The cumulative effect of cropping. Calif.

Crops to supplement rye in summer. (Valentine Substation) Nebr.

Time of seeding and intertillage studies. Tex.

Time and method of seedbed preparation. Tex.

The working out of standard methods of applying laboratory tests to southern field crops. Tex.

HORTICULTURE.

(See also Genetics for projects on inheritance and transmission of characters of the various crops.)

Almonds.

Pecan, English walnut, and almond experiment, to ascertain whether New Mexico climatic and soil conditions are suitable for the growing of these nut trees; to study the different methods of preventing winter injury to the trees; and an investigation on originating, if possible, a late blooming almond. N.Mex.

Apples.

Study of heredity in apple crosses. Maine.

Principles relating to transmission of characters in the apple as affected by selection and by crossing. Ill.

A study of Zenia in apples and of the factors which influence the fertility and sterility of apple varieties. Ark.

Apple breeding. Idaho, Iowa, Md., Oreg., Va.

Fruit breeding, especially apples and strawberries. Nebr.

Breeding work with apples, for the purpose of studying the laws of inheritance in apples and of producing new types of fruit. Studies on self-sterility experiments on the mutual influence of stock and scion. (Highmoor Farm) Maine.

Breeding apples for late blooming habit. Missouri.

Apple breeding, to produce, if possible, varieties that will mature in Alaska. Alaska.

Studies in plant breeding and in variations in garden peas and apples. Mass.

Apple experiments: Production of new varieties from seedlings. Maine.

Apples. (Cont.)

An experiment in propagating apples from selected trees. N.Y. State.

Apple orchard experiment, selection and stocks. Penn.

Pollination of the apple. W.Va.

Apple experiments: Study of self and cross sterility in leading Maine varieties. Maine.

Variety test of apples. Ala., Md., S.C.

Variety apple and peach orchard. W.Va.

Variety orchard of apples and miscellaneous tree fruits. Ky.

Apple orchard experiment with varieties. Penn.

Variety studies with apples, including field observations and orchard tests to gain information relative to their behavior, commercial possibilities and adaptation for the home orchard or garden. Va.

New apples for Wisconsin. Wis.

Apple variety tests. To sift them by testing and keeping the best. Alaska.

Apple orcharding trials; comparative varietal studies; storage endurance. Vt.

Test of a number of new varieties of apples and of the one-and two-year-old apple graft: The testing of twenty new varieties of apples such as the Delicious, King David, Champion, Apple of Commerce, Stayman Winesap, etc.; to secure data on the longevity of these varieties upon very sandy soil; to ascertain whether the one-year-old or two-year-old apple graft is the better for planting under southern New Mexico conditions. N.Mex.

Commercial value of dwarf apple trees. Va.

Fertilizers for apples. N.Y. State.

Fertilizers for apples and peaches. W.Va.

Apple orchard experiment with fertilizers. Penn.

Response of apple trees to fertilizers under different soil conditions. Va.

Influence of fertilizers on yield and quality of apples. Penn.

Influence of nitrogen, potash and phosphoric acid in apple production. Del.

Fertilizer experiments with apples. A study of the effect of fertilizing apple trees with varying amounts and kinds of material and at different seasons. To determine the effect of early and late applications of acid

Apples. (Cont.)

phosphate and nitrate of soda and the best time to apply nitrate of soda to apples to increase size of fruit and set of fruit buds. N.J.

Influence of fertilizer applications upon the yield, growth, and other physiological functions of the apple grown in different soils. Penn.

Humus and its relations to the physiological activities of the apple. Iowa.

Physiological studies of apple trees under different cultural conditions and fertilizer treatments. Mich.

Effect of fertilizers and orchard cultural systems upon color and maturity of wealthy apples. Wis.

Apple orchard experiment: Cultural methods. Penn.

Cultural methods with apples. Penn.

Apple orchard experiment with cover crops. Penn.

Effect of various cover crops upon apple production. Del.

Orchard stocks for the apple. Iowa.

Hardy stock for apples. Colo.

Producing apple stocks by cuttings. Md.

Interrelation of stock and scion in apples. Mass.

Apple experiments to determine the effect of stock on scion. Maine.

A study of the affinity between the apple scion and the pear stock, to ascertain if the pear root, which is immune to injury by the woolly aphis, is a suitable stock on which to bud or graft the apple. N.Mex.

Propagation of apple, sweet cherry, and walnut by pretreatment of scion wood in place. Penn.

An experiment in top-working apples. N.Y. State.

A comparison of budded and grafted apple trees. N.Y. State.

Pruning the apple. Minn.

Experiments in pruning apples. Mass.

Pruning apples, pears, and small fruits. Nebr.

A comparative test of little and much-pruned apple. N.Y. State.

Kind and amount of pruning for apple trees in different conditions of vigor. Va.

Apples. (Cont.)

A test of summer pruning of apples. N.Y. State.

Apple pruning experiments. A study of the effect of heading back and not heading back the annual growth in comparison with unpruned trees. N.J.

A test of low-headed v. high-headed apple trees. N.Y. State.

Physiological effect of pruning apple trees. W.Va.

The effect of different styles of pruning on the percentage of apple blossoms that set fruit.. N.Y. Cornell.

Effect of pruning and nitrogen fertilizer upon the off-year production of Wealthy apple trees. Wis.

Spraying of apple orchards. Iowa.

Experimental apple spraying. Minn.

Various spraying tests on apples and peaches. Conn. State.

Dusting and spraying apples. Mich.

Dusting apple and peach trees for the control of insects and diseases. Md.

Varietal resistance to spray injury. Tests of varieties of apples and pears for comparative resistance to sprays. Oreg.

Apple experiments: Set and development of fruit. Maine.

Causes and means of control of fruit bud formation on the apple. N.H.

A histological study of the fruit branches of the apple. N.H.

Factors influencing the functioning of apple fruit spurs, with reference to biennial fruiting. Wis.

Bud variation and value of pedigreed nursery stock of apples. Maine.

Bud selection and performance records with apples, grapes, small fruits. Mich.

A study of factors involved in the ripening of fruit, particularly apples. Idaho.

A histological and michrochemical study of the normal apple during growth, maturation and storage, with studies of the incidental changes in enzym content. Idaho.

Time of picking fruit (Spitzenberg apples and De Anjon pears under study). (Hood River Branch Station) Oreg.

Apples. (Cont.)

Studies concerning the variation in the internal structure of apples and pears as a means of identifying varieties. N.Y. Cornell.

Thinning apples. W.Va.

Thinning apples: Effect on fruit, according to different methods. Mont.

Relation of orchard practices to winter injury of apple trees. N.Y. State.

Climatic injury with special reference to apple and other fruit trees. Wis.

A study of the nature, causes, and prevention of winter injury to fruits, with special reference to the apple. N.H.

Studies of injuries from winter freezing of younger orchards of apple, peach, and plum. Ohio.

To determine the influence of environmental conditions upon different varieties of apples. Mass.

Disease resistance in apple trees. Ark.

Growth, yield, and other data on apple trees. (Highmoor Farm) Maine.

Relation of yield, type, and growth of apples (in Ben Davis orchard of 1,200 trees). Maine.

Tree records, including blooming dates, time of picking, and yield of bearing apple trees. Ohio.

One-and two-year-old tree test. To determine which is the best for planting in Oklahoma, one-or two-year-old apple trees. Okla.

A comparison of one-year and two-year apple trees for setting. Mass.

A test of the best age at which to plant apple trees. N.Y. State.

Cold storage for Iowa apples. Iowa.

The keeping qualities of apples in cold storage as affected by the health and vigor of trees. Calif.

Apple market investigations. Mass.

Apple orchard survey. (Hood River Branch Station) Oreg.

Apples: Experiments and demonstration orchard at Lincoln Institute. Ky.

Demonstration or experimental apple orchard. W.Va.

Apricots.

Apricot pruning. (Davis and commercial orchards) Calif.

Asparagus.

Asparagus and rhubarb selection. Mich.

Variety test of asparagus. Mass.

Best varieties of asparagus for yield, quality, and size of shoots. Penn.

Plant food requirements of asparagus. Md.

The relative value of applying fertilizers at the time of planting asparagus. Penn.

A study of the comparative value of coarse salt v. nitrate of soda in the commercial production of asparagus and the effect of the time of application. Penn.

A study of the comparative value of one-year v. two-year old asparagus crowns at the time of transplanting. Penn.

A study of the relative value of growing asparagus by planting the seed where the plants are to mature v. the usual method of transplanting one-year old crowns. Penn.

Relative value of seed from different portions of asparagus plant. Penn.

Relation of size of seed to vigor of asparagus plants. Penn.

To determine whether or not asparagus can be grown with profit on land of fertility suitable for the production of general farm crops. Penn.

Influence of size of asparagus crowns. Penn.

Value of asparagus seed selection for disease resistance. Penn.

Beans.

Beans (Valentine Substation) Nebr.

Color and pattern inheritance in beans. Maine.

Breeding and selecting beans for superior lines. Maine.

Perpetuation and testing of selected high yielding or high quality lines of beans. Maine.

Bean breeding for interior dry-land conditions in California. Calif.

Breeding beans for high yield and disease resistance. N.Y. Cornell.

Improvement of beans grown for canning. Wis.

Variety tests of beans. N.Y. Cornell, S.C.

Variety study of beans and cowpeas. Ark.

Beans. (Cont.)

Variety test of beans to determine the varieties best adapted for planting in the State with special reference to their resistance to blight. Okla.

Work with beans: Variety tests and selection to secure new and improved strains with special attention to the production of disease resisting varieties. (Highmoor Farm) Maine.

Garden and field bean and pea investigations. Variety tests for the production of seed. (Aberdeen Substation) Idaho.

Variety test of beans, to determine the adaptability of imported bean varieties to local conditions. P.R.

Production of dry beans. Iowa.

Experiments in Lima bean culture, to determine the cause of poor yields in this locality, and a possible remedy. Ill.

Disease resistance of beans. Maine.

Cause and prevention of sclerema and hardshell in beans. N.Y. State.

Native beans of the Southwest. Ariz.

Experiments with garden beans. Idaho.

Blackberries.

Mendelism in the hybrids of blackberries and raspberries, particularly with reference to leaf structure and habits of growth. Wash.

Variety test of bush fruit, including currants, gooseberries, raspberries, and blackberries. Md.

Small fruit experiment, to collect phenological data on a number of different varieties of strawberries, blackberries, raspberries, currants, and loganberries; to ascertain, if possible, the best varieties of these different fruits for commercial and home plantations. N.Mex.

Blueberries.

Blueberry culture. Minn.

Culture test of blueberries, to learn the best methods of growing. Alaska.

Blueberry culture, as a possible new industry for Massachusetts; as a possible substitute for cranberries on some bogs. (Cranberry Substation) Mass.

Blueberries for large and abundant fruit. R.I.

Cabbage, cauliflower, collards, broccoli, Brussels sprouts.

Breeding cabbage. N.Y. Cornell.

Cabbage, etc. (Cont.)

Strain tests of Danish Ball head cabbage. N.Y. Cornell.

Early cabbage: The relation of seed selection to earliness, yield and uniformity of type. Penn.

Relative value of the most extensively grown varieties of cabbage. Penn.

The relative value of varieties of late cabbage for different purposes. Penn.

Study of heredity of cabbage as applied to head characters. Del.

A study of the fertilizer requirement of cabbage and tomatoes. Penn.

Suitability of some of the islands or points on the bay or the ocean for the production of cabbage seed. Md.

A study of the root development of cabbage seedlings as influenced by culture and environment previous to the final transplanting. Penn.

Experiments to determine the shrinkage in yields of cabbage as a result of attacks by the cabbage aphid and cost of spraying to secure efficient control. N.Y. State.

Cabbage seed selection for disease resistance. Missouri.

Development of a yellows-resistant early cabbage: To develop yellows-resistant strains of early variety of cabbage, viz: Copenhagen, Jersey Wakefield and Charleston Wakefield. Ind.

Annual growing of late cabbages on same land, with heavy liming to repel club root. R.I.

Methods of winter storage of cabbage. Mont.

Comparative trials of 13 strains of broccoli as to earliness, yield, quality, and hardiness. Oreg.

Breeding a better type of collard. Ga.

Demonstrations in the shipping of Brussels sprouts to New Orleans. (North Louisiana Experiment Station, Calhoun) La.

Celery.

Experiments with celery: The influence of size of seed. Penn.

Premature seeding of celery: Cause and prevention. Mont.

Cherries.

Cherry breeding investigation. Oreg.

Cherries. (Cont.)

Cherry variety tests. To select the hardier ones. Alaska.

Variety test of sweet and sour cherries and of European, native and Japanese plums, to test a number of the newer varieties of these different fruits; and to ascertain why the sweet cherries are not successful in New Mexico. N.Mex.

Cherry, plum, and peach culture. Md.

A test of little and much-pruned cherry trees. N.Y. State.

To study the interrelations of stock and scion in cherry graftage. Vt.

Stocks for sour cherries and plums. Mich.

Propagation of apple, sweet cherry, and walnut by pretreatment of scion wood in place. Penn.

A test of cherries on Mazzard and Hahaleb cherry stocks. N.Y. State.

A study of the factors affecting the set of cherries. Wis.

A study of cherry pollination. Idaho.

Relation of pollination by bees to set of cherries. Wis.

Study of winter injury of cherry blossom buds. Wis.

Chili.

Improvement of Mexican chili by breeding and selection. N.Mex.

Citrus. (See also Rural economics--Cost of production)

The breeding and improvement of citrus fruit. Calif.

Citrus: The effect of different methods of culture, fertilizer treatment, and pruning upon the growth of tree and the size and quality of fruit. Ariz.

The influence of soil, environments and treatment on stock and the quantity and quality of citrus fruits, to determine the influence of soil, environments and general treatment on stock and variety measured by the size and health of the tree and the quantity and quality of the fruit. P.R.

Cooperative field trials of fertilizers and green manure crops with citrus trees. Calif.

Mulching of citrus trees with cane trash in old groves, to conserve moisture and to supply humus. P.R.

Citrus. (Cont.)

A physiological study of the effect of pruning upon the growth and productiveness of citrus trees and other horticultural plants grown under irrigation in arid regions in southern California. (Riverside) Calif.

Introduction of cultivated varieties of oranges to coffee plantations by rebudding native seedlings, to work over native seedling oranges in coffee plantations; and to work fruit true to name, late varieties, of good shipping qualities. P.R.

Citrus survey. (Riverside) Calif.

Grapefruit breeding, to obtain a commercial variety of grapefruit resistant to citrus scab. P.R.

Planning, planting, and early care of a citrus orchard for future experimental work. Calif.

Coffee.

To determine what fertilizers can be applied with profit to coffee plantations in Porto Rico. P.R.

Effect of nitrate of soda on coffee yields and comparison of same with sulphate of ammonia. To determine if sulphate of ammonia will be effective in increasing coffee yields where nitrate of soda has failed to do so. P.R.

Coffee variety tests, to find coffee of good flavor which may be more prolific or more resistant to insect attacks, disease, or adverse conditions of soil or climate than is the coffee grown here at present. P.R.

To assist in the development of the coffee industry of the Island. Guam.

Cranberries.

Culture tests of cranberries, to learn how best to grow them. Alaska.

Investigation of cranberry problems, to determine the underlying principles of cranberry production. N.J.

Cranberry bog management: General; effect of water as used in flowage, temperature at different seasons and depths, depth, chemical composition; drainage and irrigation, use of tile instead of open ditches; harvesting, technique of; management in its relation to the control of insects; management in relation to the control of fungus diseases. (Cranberry Substation) Mass.

Investigation of cranberry bog weeds and their distribution. (Cranberry Substation) Mass.

Eradication of weeds in cranberry bogs by using chemicals. Oreg.

Studies of cranberry storage and shipping conditions. (Cranberry Station) Mass.

Study of chemical changes in cranberries during storage. Mass.

Cucumbers.

Study of production problems with greenhouse cucumbers and lettuce.
(Market Garden Field Station) Mass.

Training experiments with forcing cucumbers. N.Y. Cornell.

Currants.

Currant breeding, to secure new varieties suited to the Alaska climate.
Alaska.

Currant variety tests, to find varieties best suited to Alaska. Alaska.

Studies on varieties of currants in an endeavor to standardize the
nomenclature. Ohio.

Currants: Variety studies, including field observations and orchard tests
to gain information relative to their behavior, commercial possibilities
and adaptation for the home orchard or garden. Va.

Variety test of bush fruit, including currants, gooseberries, raspberries,
and blackberries. Md.

Study of currants as to hardiness and fruitfulness. Wis.

To collect phenological data on a number of different varieties of straw-
berries, blackberries, raspberries, currants, and loganberries; to
ascertain if possible, the best varieties of these different fruits for
commercial and home plantations. N.Mex.

Propagation and selection of small wild fruits, to find desirable plants of
red raspberries and red currants. Alaska.

Filberts.

Filbert pollination and breeding investigations, including crosses and self-
pollination of five varieties for self-fertility and self-sterility studies.
Oreg.

Floriculture.

Fruit and flower breeding. Mich.

Flower trials, to determine the best varieties of perennial and annual
flowers and how they can best be grown. N.Dak.

Carnation breeding. N.H.

Carnation breeding experiments, to improve and extend the list of commercial
varieties and to study the inheritance of color. N.J.

Selection of carnation and rose plants, to determine whether production can
be increased or decreased by this means. Ill.

Floriculture. (Cont.)

Relation of date of propagation and benching to productiveness of carnation plants. Penn.

A study of some of the causes of the bursting of the carnation calyx with special reference to its inherited character. Md.

Influence of physical soil factors and of various chemicals upon the growth of carnations. R.I.

Geranium varieties. Md.

Variety tests of gladioli. N.Y. Cornell.

Variety tests of Pogon iris. N.Y. Cornell.

Breeding orchids. N.Y. Cornell.

Orchid seed germination. N.Y. Cornell.

Study of the germination of orchid seed: The conditions and factors which influence seed germination and the influence of the fungus which seems essential in the germination process. Ill.

Variety studies with peonies. N.Y. Cornell.

Variety tests of perennial phlox. N.Y. Cornell.

Hardy primulas, species, types, and varieties of. N.Y. Cornell.

Rose breeding (R. rugosa), to produce new varieties. Alaska.

Breeding hardy roses. N.Y. Cornell.

Variety studies with garden roses. N.Y. Cornell.

Crossing studies with garden roses. N.Y. Cornell.

A test of stocks for garden roses. N.Y. Cornell.

Variety tests of winter-flowering sweet peas. N.Y. Cornell.

Testing the difference between seed of the Spencer type of winter flowering sweet pea grown in the greenhouse and outdoors in California. Md.

How to get seed of the ten-weeks stock (Malthiola icana annua) to produce a large per cent of double flowers. Md.

A test of pedigreed violet plants. N.Y. State.

Fruit bud studies.

Effect of cultural operations and fertilizers in modifying the development of fruit buds and their resistance to extreme cold. Okla.

Fruit bud studies. (Cont.)

Effect of soil environment on fruit bud formation. Va.

Studies of fruit bud formation. Kans.

Causes and means of control of fruit bud formation on the apple. N.H.

Pruning as a factor in bud formation and differentiation. Oreg.

Fruit bud formation and development. Calif.

Fruit bud development of fruit trees as influenced by treatment and previous crops, to determine and record the behavior of individual fruit producing spurs and branches through a series of years; to determine factors favoring or opposing fruit bud formation on these parts as influenced by previous bearing, thinning fruit, pruning, tillage, girding, fertilizers, etc. Missouri.

Causes and means of control of fruit-bud formation on the apple. N.H.

Fruits, general. (See also Rural economics--Cost of production)

Inheritance of fruit characters. Minn.

Inheritance of characters in tree, vine, and bush fruits. N.Y. State.

Breeding experiments with fruits. S.Dak.

Fruit breeding and selection, to evolve new fruits suited to Arkansas conditions. Ark.

Breeding hardy fruits, to develop by seedlings and crosses between wild and tame species, varieties better adapted to North Dakota than those now existing. N.Dak.

Fruit and flower breeding. Mich.

Breeding experiments with all tree, bush, and vine fruits that will grow in this climate. N.Y. State.

Breeding fruits of the genus Rubus. S.C.

Improvement of hardy wild fruits of the Northwest by breeding and crossing. S.Dak.

Breeding for hardiness in fruits. Minn.

Variety tests of fruits. Iowa, Mass., Minn., N.H.

Variety tests of fruit trees. (Hermiston Branch Station) Oreg.

Variety tests of fruits, to determine the hardiest and best fruits for North Dakota conditions. N.Dak.

Fruits, general. (Cont.)

Records as to condition, vegetative, and fruiting characteristics, and hardiness for all varieties under trial of apples, plums, cherries, etc. Oreg.

Variety tests of commercial fruits. (Corvallis Substation) Mont.

Variety orchard of apples and miscellaneous tree fruits. Ky.

Variety test of fruit trees. W.Va.

Variety tests of apples, pears, peaches, grapes, plums, and small fruits. Del.

Variety tests of all tree, bush, and vine fruits that will grow in this climate. N.Y. State.

Variety testing of tree fruits, small fruits, and vegetables. Idaho.

Variety test of orchard fruit, to find varieties best suited to the State, particularly apples, peaches, and plums. Okla.

Fruit trees and fruit bushes. To test adaptability to Matanuska Valley. (Matanuska) Alaska.

Tree fruits: Studies of varieties and management. Mont.

Tests of new importations of fruits and vegetables introduced by the U.S. Department of Agriculture. S.C.

Tree characters of fruit varieties. Mass.

Demonstration orchard and variety test of apples, plums, cherries, and pears at Bethany. W.Va.

Nitrate of soda as an orchard fertilizer. Trials in pear, apple, and prune orchards. Oreg.

Tests of fertilizers for apples, pears, strawberries, potatoes, and clover on different soils of Hood River Valley. (Hood River Branch Station) Oreg.

Fertilizers for fruit trees in southern Oregon, including experiments with pears, peaches, and apples on different soils. (Talent Branch Station.) Oreg.

Cultural tests of fruits, to determine the best way of handling the soil; the best pruning methods and the best methods of winter protection for the various fruits in North Dakota. N.Dak.

Cultural investigations with fruits and vegetables. Ky.

Culture experiments with fruits, to develop hardy apples, pears, plums, and grapes. S.Dak.

Fruits, general. (Cont.)

Effects of different depths of planting upon growth of trees. Oreg.

Time of picking fruit (Spitzenberg apples and DeAnjon pears under study)
(Hood River Branch Station). Oreg.

The nutrition of fruits with special reference to their hardiness. Missouri.

Root hardiness of fruit trees. Wis.

Fruits and vegetables for high altitudes. Colo.

Hardy tree fruits for high altitudes. Colo.

The introduction and testing of apples, pears, and plums to determine their
winter hardiness and adaptability to high altitudes. (High Altitude
Substation) Idaho.

To determine the limits of budding and grafting and the factors which con-
trol these. Okla.

Resistant native stocks for grafting. Ariz.

A study of fruit tree stocks, pruning, and planting methods. Calif.

Climatic injury with special reference to apple and other fruit trees. Wis.

Smudging experiment, to test a few of the different kinds of smudge pots,
and to ascertain whether or not smudging is practicable. N.Mex.

Phenological fruit investigations, to secure data on the blooming and
ripening periods of the different orchard fruits. N.Mex.

Sterility in fruits. Minn.

Self-fertility and self-sterility of fruits. Missouri.

Fruit tree injury from abnormal food supply. Deficiency or surplus of
certain plant foods. Mont.

A study of factors involved in the ripening of fruit, particularly apples.
Idaho.

Factors that influence the abscission of flowers of young fruits.
N.Y. Cornell.

A study of the chemical composition of fruits during development under
varying conditions of treatment. Del.

Factors that influence the size and water supply of fruits. N.Y. Cornell.

Study of the water requirement of fruits as affected by pruning and special
cultural methods. Ariz.

Fruits, general. (Cont.)

The effect of possible secretions from grass roots on fruit trees. N.Y. Cornell.

Fruit storage. Wash.

Fruit surveys. Colo.

Fruits, tropical and subtropical. (See also Citrus, coffee, figs.)

A study of native aguacate of Porto Rico, to find trees that produce good fruit of good shipping qualities and the distribution of bud-wood from the same. P.R.

Experiments with bananas and plantains, to conduct variety, fertilizer and other cultural experiments, and to determine the best varieties and methods of fertilizing and culture. Guam.

To assist in the development of the cacao industry of the Island. Guam.

To determine extent of variation in yield of individual cacao trees and factors affecting same. P.R.

Coconut experiments, to determine yields and quality of two leading strains or types of coconuts grown in Guam on different soil types; yield and value of different types; effect of fertilizers and careful cultivation on two leading strains or types of coconuts grown in Guam. Guam.

Coconut fertilization, to learn fertilizer requirements of coconuts on Porto Rico beach land. P.R.

Culture and management of date orchards with special reference to the improvement of the yield and quality of fruit and the rooting of off-shoots. Ariz.

To produce by crossing, selection and inbreeding a variety of dates of high quality which will ripen naturally under Arizona conditions. Ariz.

A study of date seedlings of known parentage, reared from cross-pollinated seed. Calif.

Introduction and study of jujube plants. Ariz.

To acquire, test and disseminate better varieties of mangos than those grown locally. P.R.

Vanilla shading and fertilizer tests, to determine the effect of very heavy as contrasted with very light shading, and also the effect of fertilizers on growth and production of vanilla. P.R.

Effect of limitation of production on size of vanilla beans and on subsequent crops. P.R.

Fruits, tropical and subtropical. (Cont.)

Tropical fruit investigations, to secure a greater variety of desirable fruits for growing in Guam. Guam.

Breeding investigations with tropical horticultural plants, to determine methods of breeding best adapted to each species under consideration and to develop new and desirable forms. Hawaii.

The cold storage of certain semi-tropical fruits. Calif.

To determine the relative merits of various varieties of different species of tropical fruits and also to determine the best cultural treatment for species in question. Hawaii.

Gooseberries.

The production of hardy varieties of gooseberries suited to the country. Alaska.

To find the varieties of gooseberries best suited to Alaska. Alaska.

Variety studies with gooseberries, including field observations and orchard tests to gain information relative to their behavior, commercial possibilities, and adaptation for the home orchard or garden. Va.

Variety test of bush-fruit, including gooseberries, raspberries, blackberries, and currants. Md.

Gooseberry experiments with reference to mildew-resisting powers. Wis.

Grapes.

Hereditary studies of Vitis rotundifolia. Ga.

Transmissibility and degree of permanence of vegetative variations of the vine. Calif.

Inheritance of color in Rotundifolia grapes, to determine the laws governing inheritance of color in Vitis rotundifolia. N.C.

Inheritance of size of fruits in Rotundifolia grapes, to determine the factors governing the size of berries in Vitis rotundifolia and method of transmission of the characters. N.C.

Studies in the inheritance of sex in Rotundifolia grapes, to establish the laws of transmission of sex applying to Vitis rotundifolia and to determine methods to be used in hybridization. N.C.

Hybridization of Rotundifolia grapes with other species, to determine the various species with which Vitis rotundifolia will hybridize; to find methods of overcoming antipathy where it occurs, and to establish a scale of hybridization of Vitis rotundifolia with other species. N.C.

Grapes. (Cont.)

Inheritance of productivity of Rotundifolia grapes, to establish standards of productivity for the most important varieties, to study the factors bearing upon productivity in order to determine methods to pursue in increasing productivity in Vitis rotundifolia and to watch for unusually productive vines. N.C.

A study of quality characters of Rotundifolia grapes, to study the factors controlling the various qualities of Vitis rotundifolia such as clinging character of the berries, thickness of skin, transpiration, flavor, aroma, and disease resistance, with a view to finding methods of improvement. N.C.

The influence of the rest period and chemical reagents on the root formation of Vitis rotundifolia cuttings. Ga.

Inheritance of characters in tree, vine, and bush fruits. N.Y. State.

Grape breeding. Md.

Breeding experiments with all tree, bush, and vine fruits that will grow in this climate. N.Y. State.

Improvement of bearing of vine varieties by selection. Calif.

Bud selection and performance records with grapes, apples, and small fruits. Mich.

Grape variety tests. Ala., Mich., S.C.

Variety tests with grapes at the substations. S.C.

Grape variety studies, including field observations and orchard tests to gain information relative to their behavior, commercial possibilities, and adaptation for the home orchard or garden. Va.

Varieties of grapes best suited for the State. Okla.

Tests of new or little known varieties of vines. Calif.

Variety tests of all tree, bush, and vine fruits that will grow in this climate. N.Y. State.

Fertilizers for grapes. N.Y. State.

Grafting Delaware grape on various stocks. Md.

Effects of summer pruning on the quantity and quality of the crop on the vigor of the vine. (Davis) Calif.

Grape trellis and training experiments. Md.

Stump system y. trellis experiment with grapes, to investigate which of the two systems is the more expensive and which will produce the larger yield; to develop a practical and economical method of banking up the vines grown according to the trellis system. N.Mex.

Grapes. (Cont.)

Grape spraying. Mich.

Relation of the number of vines per acre to the quantity and quality of the crop. Calif.

Test of Vinifera grapes under Maryland conditions. Md.

Table grapes for the San Joaquin Valley. Calif.

A study of grapes, Vitis vinifera, compared to native or V. champinii varieties. Tex.

Resistant stocks for raisin varieties at Kearney Park. Calif.

Relation of degree of maturity of grapes to quantity and quality of raisins. Calif.

The utilization of the Muscadine grape. S.C.

Irrigation of vineyards. (Davis) Calif.

A monographic study of the grape. Ark.

Grape experiments. W.Va.

Vineyard investigations. Iowa.

Greenhouse soils, management and treatment.

The effects of heating soils on germination and plant growth and the development of diseases in heated soils which have become reinfested. Wis.

Soil treatment for greenhouse lettuce and tomatoes, to determine the effects of steam sterilization upon greenhouse soil for lettuce and tomatoes. Ill.

Study on the effects of using the same soil in greenhouse benches more than one year. Ill.

Juneberries.

Juneberry tests, to see if any can grow. Alaska.

Landscape gardening.

New plant materials for landscape use in Iowa: To collect reliable data on plant material regarding their landscape value under Iowa conditions; to test on the station grounds new and little known plant materials. Iowa.

A study of the ferns of New York State in their relation to landscape art. N.Y. Cornell.

Landscape architecture: Its relation and application to the rural schools of New York State. N.Y. Cornell.

Landscape gardening. (Cont.)

A study for the purpose of establishing a foliage key to landscape plants.
N.Y. Cornell.

A study of the history of landscape art in England. N.Y. Cornell.

Lettuce.

Head lettuce investigations. Ky.

The development of superior strains of Grand Rapids lettuce. Ohio.

Strain tests of Grand Rapids lettuce. N.Y. Cornell.

A study of the effects of certain fertilizer treatments on lettuce and tomatoes under glass. Penn.

Study of production problems with greenhouse lettuce and cucumbers. (Market Garden Field Station) Mass.

Litchis.

Litchi investigations, to secure data on the best methods of cultivation and marketing of the litchi. Hawaii.

Loganberries.

To collect phenological data on a number of different varieties of strawberries, blackberries, raspberries, currants, and loganberries; to ascertain, if possible, the best varieties of these different fruits for commercial and home plantations. N.Mex.

Mulberries.

Introduction and study of mulberries. Ariz.

Mushrooms.

Mushroom culture. W.Va.

Nuts, general.

Nut culture. Md., Minn.

Off-year production.

Effect of pruning and nitrogen fertilizer upon the off-year production of Wealthy apple trees. Wis.

Factors influencing the functioning of apple fruit spurs, with reference to biennial fruiting. Wis.

Olives.

Pruning olives with a view to favoring annual bearing and better fruit.
Calif.

The effect of different methods of olive orchard management and pruning upon
the growth of tree and yield. Ariz.

Onions.

A physiological study of onion dormancy. W.Va.

Orchard management, fertilizers, culture, miscellaneous.

Orchard fertilizers. Iowa, Mich.

Orchard fertilization. Mass., Wis.

Orchard fertilization experiments. Fertility studies of orchards on various
soils. N.Y. State.

The effect of grass on the nitrogen supply of fruit trees, and the response
of the trees to variations in the nitrogen supply. N.Y. Cornell.

Orchard management investigations. Iowa.

Cooperative orchard management. Minn.

Cover crops. Mich.

A study of cover crops. Va.

Orchard culture tests, Corvallis clean culture and various cover crops.
Mont.

Various plants as cover crops and their effects on the growth of fruit trees.
Mass.

To determine the effect of growing crops in orchards. Wash.

The influence of tree growth of different methods of handling alfalfa in
orchards. (Hood River Branch Station) Oreg.

A test of mulches for orchard trees. Calif.

Methods of culture. Va.

Orchard culture, including fillers and their pruning for early bearing,
various combinations of culture, cover crops, manure and fertilizers, also
a model home orchard. (Union Fruit Farm) Nebr.

Cultural tests of fruits, to determine the best way of handling the soil;
the best pruning methods and the best methods of winter protection for the
various fruits in North Dakota. N.Dak.

Orchard management, etc. (Cont.)

County experiment orchards, for the study and demonstration of cultural methods, cover crops, mulching, pruning, and spraying. Ohio.

Effect of tillage practices on soil moisture content and growth of trees. Calif.

Soil treatment in apple orchards. Ill.

Orchard nutrition, with special reference to the relations between plant food, environment, nutritive conditions within the plant and production. Missouri.

To study the effects and particularly the factors responsible for the effects of different systems of soil management on apple trees. Ind.

Studies of the root systems of the apple tree under different methods of soil management, to study the depth, amount, and character of tree roots under different systems of soil management. Ind.

A study of the temperatures of the soil under different systems of management as affecting the apple tree. To find the temperatures existing under the various soil treatments and their effects on the apple tree and its environment. Ind.

Planting distances for deciduous orchard trees. (Davis) Calif.

Methods of planting orchard trees, including comparisons of different ages and classes of nursery stock for planting purposes, different depths of planting, different methods of pruning roots and tops at time of planting, preparation of the soil for planting, and the transplanting of trees unusual size and age for orchard purposes. Ill.

Use of dynamite in tree planting. Wis.

Renovation of prune orchards. Wash.

Demonstration of experimental orchard. W.Va.

Growing nursery stock, to produce Alaska grown trees for test in various parts of the territory. Alaska.

Ornamentals, hedge plants.

Variety tests of ornamental trees. (Hermiston Branch Station) Oreg.

Breeding experiments with ornamentals. S.Dak.

Ornamental annuals in variety, to beautify station and test them. Alaska.

Variety trials of shrubs, to determine the best shrubs for North Dakota and how they can best be used. N.Dak.

Ornamentals, hedge plants. (Cont.)

Variety trials of shade trees, to learn which trees are most hardy in North Dakota and by studying them to learn where they can best be used. N.Dak.

Trees and shrubs for shade and ornamentation. Ariz.

Variety tests of windbreak trees. (Horniston Branch Station) Oreg.

The planting of ornamental trees and shrubs for the homestead. (High Altitude Substation) Idaho.

Horticultural investigations, to determine the adaptability of various ornamental trees to this area for the improvement of the homestead. (Aberdeen Substation) Idaho.

Study of ornamental varieties and their uses. Minn.

Ornamental shrubbery tests, to study their behavior. Alaska.

Tests of ornamental trees and shrubs. Mont.

Ornamental perennials tests, to study their behavior. Alaska.

Introduction and study of tamarisks. Ariz.

Peaches.

The genetic composition of peaches. Mass.

Study of certain factors in heredity of the peach. Del.

Peach breeding experiments, to improve the present list of commercial varieties and to study the inheritance of unit characters in the peach. N.J.

Cross-breeding peaches with reference to improved fruits, improved root-stocks, study of inheritance in *Amygdalus*. Calif.

Peach breeding for hardy sorts. Missouri.

Breeding peaches. Mass.

Peach variety tests. Ala., Ga., S.C.

Variety tests with peaches at the substations. S.C.

Variety peach and apple orchard. W.Va.

Variety studies with peaches, including field observations and orchard tests to gain information relative to their behavior, commercial possibilities and adaptation for the home orchard or garden. Va.

Use of fertilizers on the peach orchard. N.H.

Peaches. (Cont.)

Peach orchard fertilization. Ohio.

Fertilizer tests with peaches. Ga.

Fertilizers for peaches and apples. W.Va.

Influence of fertilizers on peach production. Penn.

Response of peach trees to fertilizers under different soil conditions. Va.

Functions of nitrogen, potash, and phosphoric acid in the production of the peach. Del.

Peach, plum, and cherry culture. Md.

Investigations on spraying peaches. Ill.

Various spraying tests on apples and peaches. Conn. State.

Dusting peach and apple trees for the control of insects and diseases. Md.

A test of the effect of dusting peach trees with various commercial sulphur preparations for the control of the San Jose scale. Tex.

A study of some factors influencing the hardiness of the peach. Md.

Local variations of climate in relation to the peach crop. Mass.

Peach orchard experiments, to secure data on cost of production, yields of varieties, different ways of pruning, and longevity of the different varieties. N.Mex.

A study of the various methods of pruning peach trees to determine the effect of various modifications of pruning upon the amount, form, and character of the wood growth, the effect of pruning during the dormant season, the effect of pruning upon fruit production and the relation between various methods of pruning and the essential details of orchard management. N.J.

Soil treatments in peach orchards. Ill.

The longevity and adaptability of the Indian cling peach. A comparison of the longevity of the modern commercial varieties of peach when budded on to the Indian Cling stock v. the same variety on stock from the mixed seed obtained on the market: To test the Indian Cling seedlings as to heredity or stability of character, and as direct fruit producers. Tex.

Study with peaches on change of permeability and its relation to availability. Del.

Studies of injuries from winter freezing of younger orchards of apple, peach, and plum. Ohio.

Pears.

Pear breeding. Md.

Pear breeding. (Talent Branch Station) Oreg.

Breeding pears for resistance to pear blight. Ga.

Variety pollination experiment with pears: A variety test of 78 varieties, to study the relative resistance of these varieties to the pear blight; and to study the degree of self-sterility or self-fertility. N.Mex.

Testing new varieties of pears. (Talent Branch Station) Oreg.

Variety tests with pears, with special reference to susceptibility to blight. Ala.

Pruning pears, apples, and small fruits. Nebr.

A comparison of little and much pruned pear trees. N.Y. State.

A comparative test of high and low-headed pear trees. N.Y. State.

Pear harvesting and storage investigations. Development of a physical indicator of maturity of the fruit. Oreg.

Pear harvesting and storage investigations: Storage tests with Bosc pears. Oreg.

A study of the comparative keeping qualities of different varieties of pears in cold storage. Calif.

Tests of varieties of apples and pears for comparative resistance to sprays. Oreg.

Pear spraying investigations to determine a safe spray application for De Anjon pears. (Hood River Branch Station) Oreg.

Time of picking fruit. (Spitzenberg apples and De Anjon pears under study). (Hood River Branch Station) Oreg.

Studies concerning the variation in the internal structure of apples and pears as a means of identifying varieties. N.Y. Cornell.

Test orchard of pear stocks. (Talent Branch Station) Oreg.

A study of the affinity between the apple scion and the pear stock, to ascertain if the pear root, which is immune to injury by the woolly aphis, is a suitable stock on which to bud or graft the apple. N.Mex.

Pear growing in eastern Colorado. Colo.

Peas.

Breeding of field and canning peas. Wis.

Peas. (Cont.)

Studies in plant breeding and in variations in garden peas and apples.
Mass.

Breeding and improvement of garden and field peas. Idaho.

Variety tests with garden and field peas and beans for the production of seed. (Aberdeen Substation) Idaho.

Variety tests with standard varieties of garden and field peas. (Sandpoint Substation) Idaho.

Garden and field pea investigations, to determine the varieties best adapted to irrigated and dry lands. (High Altitude Substation) Idaho.

Cultural experiments with garden and field peas. Idaho.

Classification studies with garden and field peas. Idaho.

Pecans.

Pecan variety tests. Ala., Ga.

Variety tests with pecans at the Coast Station. S.C.

Pecan investigation, to test the better varieties of pecans to see if some cannot be found which will prove hardy in this part of Oklahoma. Okla.

Pecan culture in California. (Davis) Calif.

Self-sterility in varieties of Hicoria pecan. Ga.

Pecan, English walnut, and almond experiment, to ascertain whether New Mexico climatic and soil conditions are suitable for the growing of these nut trees; to study the different methods of preventing winter injury to the trees; and an investigation on originating, if possible, a late blooming almond. N.Mex.

Walnut and pecan studies with special reference to top grafting and climatic and soil adaptation. Ariz.

A study of the pecan industry in Arkansas. Ark.

A study of the proteins of the pecan. To find the per cents of proteins extracted by the solvents commonly used. Okla.

Peppers.

Experiments in the culture of peppers, to determine the relation of certain cultural methods to earliness and yield. Ill.

Commercial experiments with bell peppers. La.

Persimmons.

Development of fruit in persimmon and pawpaw, to study the histology, morphology, and physiology of these fruits. Md.

Pistachios.

Introduction and study of pistach trees. Ariz.

Plums.

Improvement of plums by selection. Wis.

The pollination of Domestica and Triflora plums under California conditions. (Davis) Calif.

Variety plum orchard. W.Va.

Plum variety tests, to see if any will mature fruit. Alaska.

Variety test of European, native, and Japanese plums and sweet and sour cherries, to test a number of the newer varieties of these different fruits. N.Mex.

Variety tests with plums. S.C.

Plum, peach, and cherry culture. Md.

A test of little and much-pruned plum trees. N.Y. State.

Experimental plum spraying. Minn.

A test of six different stocks for plums. N.Y. State.

Stocks for plums and sour cherries. Mich.

Studies of injuries from winter freezing of younger orchards of apple, peach, and plum. Ohio.

Pollination studies. (See also specific fruits).

Pollination studies. (Davis, Berkeley, and orchards of the State) Calif.

Tests of sterility of varieties of apples and influence of insect pollination and of the development of pollen tubes and process of fertilization in self-pollinated and cross-pollinated blossoms. Wash.

Prunes.

Prune breeding investigations. Oreg.

Prune studies. Calif.

Renovation of prune orchards. Wash.

Prunes. (Cont.)

Rejuvenation of old fruit trees with special reference to prunes. Calif.

A chemical study of the process of ripening in the prune, with special relation to improvement of methods of drying. Wash.

Pruning. (See also Specific fruits)

Summer v. winter pruning experiments. Idaho.

Pruning experiments. (Hood River Branch Station) Oreg.

The effect of pruning and of fruiting, especially seed production, on the amount of dry matter produced by a given leaf area, with apples, cherries, and grapes. N.Y. Cornell.

Pruning as a factor in bud formation and differentiation. Oreg.

Comparison of the effects of long and short pruning on varieties which are commonly pruned both ways. Calif.

The effect of the pruning necessary to secure various forms on the leaf surface, growth, and fruiting habit of apples, pears, plums, quinces, cherries, and peaches. N.Y. Cornell.

Pruning experiment, including pruning to vase-shaped trees, to semi-leaders, to leaders and summer pruned. N.H.

A comparison of tree systematically headed in year after year with trees not pruned. Mass.

Pruning experiment, to study the effect of different times and styles of pruning. N.Mex.

Some physiological responses of the apple tree to pruning, to gain an accurate index of tree activity through physiological studies with a view of interpreting the results of pruning practices. Ind.

Physiological effect of pruning fruit trees. W.Va.

A physiological study of the effect of pruning upon the growth and productivity of citrus trees and other horticultural plants grown under irrigation in arid regions in southern California. (Riverside) Calif.

To study the effects of pruning upon the tree and some of the causes contributing thereto. Ind.

Experiments on the comparative effect of different methods of pruning on different fruit varieties and soils. Calif.

Tests of different methods of pruning. Ohio.

The effect of different methods of pruning upon tree and fruit. Ariz.

Pruning. (Cont.)

A study of fruit tree stocks, pruning, and planting methods. Calif.

Dressings for pruning wounds. Mich.

Quinces.

Quince variety tests. Ala., Md.

Raspberries.

Mendelism in the hybrids of raspberries and blackberries, particularly with reference to leaf structure and habits of growth. Wash.

Raspberry breeding, to produce new and better varieties. Alaska.

Breeding work with the dewberry and raspberry. Tex.

Propagation and selection of small wild fruits, to find desirable plants of red raspberries and red currants. Alaska.

Raspberry variety tests, to test them out to find the best sorts. Alaska.

Variety tests and breeding work with small fruits, especially strawberries and raspberries. (Aroostook Farm) Maine.

Variety test of bush fruit, including currants, gooseberries, raspberries, and blackberries. Md.

Raspberry variety studies, including field observations and orchard tests, to gain information relative to their behavior, commercial possibilities and adaptation for the home orchard or garden. Va.

Fertilizers for red raspberries, including nitrate of soda and sulphate of ammonia. Oreg.

To collect phenological data on a number of different varieties of strawberries, blackberries, raspberries, currants, and loganberries; to ascertain, if possible, the best varieties of these different fruits for commercial and home plantations. N.Mex.

Rhubarb.

Rhubarb and asparagus selection. Mich.

The development of an improved variety of rhubarbs. Penn.

Rhubarb culture experiments. La.

Small fruits, general.

Inheritance of characters in tree, vine, and bush fruits. N.Y. State.

Small fruits, general. (Cont.)

Breeding experiments with all tree, bush, and vine fruits that will grow in this climate. N.Y. State.

Propagation and selection of small wild fruits, to find desirable plants of red raspberries and red currants. Alaska.

Variety tests and breeding work with small fruits, especially strawberries and raspberries. (Aroostook Farm) Maine.

Variety tests of small fruit. Mont.

Variety tests of small fruits and vegetables. Mich.

Variety testing of tree fruits, small fruits, and vegetables. Idaho.

Variety tests of apples, pears, peaches, grapes, plums, and small fruits. Del.

Variety tests with small fruit at the substations. S.C.

Variety test of bush fruit, including currants, gooseberries, raspberries, and blackberries. Md.

Variety tests of all tree, bush, and vine fruits that will grow in this climate. N.Y. State.

To test some of the most popular varieties of bush fruits and strawberries. Okla.

Small fruit tests, to learn what small fruits can be grown and how best to grow them. Alaska.

Bud selection and performance records with small fruits, grapes, and apples. Mich.

Pruning small fruits, pears, and apples. Nebr.

To determine the possibilities of growing small fruits for home use. (High Altitude Substation) Idaho.

Bush fruit experiments. W.Va.

Small fruit survey. W.Va.

Spinach.

A study of spinach as a market garden crop for southern Arizona. Ariz.

Spinach following tomatoes. Oreg.

Squash.

Studies of heredity in vegetables, especially squashes and tomatoes. N.H.

Squash. (Cont.)

Pure line breeding with squash and strawberries. Vt.

Spraying, dusting, and fumigating, general. (See also Chemistry-chemical studies, various; Horticulture-specific fruits; Diseases of plants- fungicides and specific plants; and Entomology- insecticides.)

Spraying investigations. Ark.

Spraying investigations: Relative value of different materials for moss eradication on trees. Oreg.

Testing new spray materials. Mass.

Tests of spraying materials. Mich.

Chemical investigation of spray materials. Oreg.

Spraying fruits for insect and fungus diseases. Missouri.

Spraying, with special reference to meeting the local requirements to control insect and fungus diseases. Va.

Scab spraying investigations: Testing of proprietary sprays. (Hood River Branch Station) Oreg.

Effect of long-time spraying of orchards. Ohio.

Scab spraying investigations, determining strength of dilutions necessary to effect control. (Hood River Branch Station) Oreg.

Effect of methods of mixing upon finished spray mixtures under field conditions. Ark.

Investigation of stickers, spreaders, and diluents for spraying and dusting, particularly the latter. To find satisfactory dust materials that will take the place of liquid mixtures, to find a spreader for commercial lime-sulphur and a sticker for self-boiled. N.J.

The solubility of calcium and magnesium arsenates when used for spraying purposes. Mich.

Scab spraying investigations, studies of spraying practices as a basis for spraying program. (Hood River Branch Station) Oreg.

Disinfectants for blight control work. (Talent Branch Station) Oreg.

Spraying v. dusting. Conn. State.

Dusting experiments to determine the practicability of dust applications in the control of diseases and insects of the orchard. Va.

The toxicity of arsenical sprays. Wash.

Spraying, etc. (Cont.)

Physiological effects of arsenical compounds on vegetation. Mont.

Why and under what conditions do arsenicals burn foliage. Mass.

Physiological reaction of plants to light intensity and moisture in relation to burning of foliage by sprays and fumigants. Mass.

The stimulating effect of Bordeaux mixture on plants, especially the potato plant. Vt.

Why insecticides burn foliage. Tests of various insecticides to find the value of materials sent in for trials. Mass.

Comparative tests in the use of present day spraying equipment. (Hood River Branch Station) Oreg.

A test of spray nozzles. W.Va.

Stock and scion investigations. (See also specific fruits.)

Root stock investigation. Calif.

Stock and scion investigations, to study the interrelation of stock and scion in both its commercial and scientific aspects. Ind.

A study of the relationship of the parentage of scions to subsequent fruitage; of the question whether scions from high-bearing, low-bearing, and constant-bearing trees will perpetuate these characteristics or whether they will be modified by the characteristics of the tree into which they are grafted. Vt.

A study of the affinity between the apple scion and pear stock. To ascertain if the pear root, which is immune to injury by the woolly aphis, is a suitable stock on which to bud or graft the apple. N.Mex.

Strawberries.

Strawberry breeding investigations. Pollination experiments with Ettersburg 121. Oreg.

Fruit breeding, especially apples and strawberries. Nebr.

Strawberry breeding, to secure varieties that shall be suited to the Alaska climate; particularly in point of hardiness. Alaska.

Pure line breeding with strawberries and squash. Vt.

Strawberry runner selection. A study in improvement in yield by stolon selection on the basis of parental yields. Vt.

Strawberry breeding investigations. Varietal trials with new varieties. Oreg.

Strawberries. (Cont.)

Variety tests and breeding work with small fruits, especially strawberries and raspberries. (Aroostook Farm) Maine.

Strawberry variety tests. Ala., Wis.

Strawberry variety tests to test and select the best varieties. Alaska.

Testing new variety strawberries. Md.

To test some of the most popular varieties of bush fruits and strawberries. Okla.

Strawberry experiments, including variety test, bud variation, and strawberry culture. W.Va.

Methods of growing strawberries. Md.

Study of the life processes of the strawberry. Mass.

Sterility of strawberries, cause and remedies. Vt.

Investigations with everbearing strawberries. Missouri.

To collect phenological data on a number of different varieties of strawberries, blackberries, raspberries, currants, and loganberries; to ascertain, if possible, the best varieties of these different fruits for commercial and home plantations. N.Mex.

Sweet corn.

Breeding sweet corn suitable for the South. Ga.

Improvement of yield, quality, and uniformity of sweet corn. Wis.

Breeding and selection for better sweet corn for canning. Maine.

Sweet corn ear-to-row tests. Ohio.

Improvement of dent, flint, and sweet corn in yield and feeding value, by breeding work in 3 different localities, extended to include work with tomatoes, especially the value of first generation hybrids. Conn. State.

Utilization of hybrid vigor in sweet corn, to cross distinct strains in order to get hybrid grain for seed purposes. (Highmoor Farm) Maine.

Sweet corn breeding for seed improvement. Iowa.

Sugar corn seed production and breeding. Md.

To study seed improvement of seed corn and to compare home-grown seed with imported from the East and North. Ind.

Sweet corn. (Cont.)

Variety tests and selection to secure new and improved strains of sweet corn. (Highmoor Farm) Maine.

Varietal studies with sweet corn. Iowa.

Variety test with sweet and silage corn. Maine.

Investigations in the production of sweet corn for the home garden. (North Louisiana Experiment Station) La.

Metabolism studies with sweet corn. Md.

An experiment to determine the effects of removing suckers from sweet corn. N.Y. Cornell.

Study of the protection of sweet corn seed from infection by Fusarium, both in the field and in storage. Conn. State.

Tomatoes.

Studies of heredity in vegetables, especially squashes and tomatoes. N.H.

A study of inheritance in the tomato. Penn.

Improvement work with tomatoes, especially the value of first generation hybrids, and with dent, flint, and sweet corn for yield and feeding value, by breeding work in 3 different localities. Conn. State.

To develop a more satisfactory strain of tomato for a canning crop tomato. Studies of plant growing and fertilizer requirements. Ind.

Development of a wilt resistant greenhouse tomato. Ind.

Effect of using home grown seed as contrasted with purchased seed of tomatoes. Mont.

Tomato experiments, to try the different methods of producing early tomatoes; to test a number of representative varieties of the early and late ripening kinds; to try different cultural methods. N.Mex.

Variety tests with tomatoes. S.C.

The relative merits of tomato varieties for different purposes. Penn.

Variety tests of forcing tomatoes. N.Y. Cornell.

Fertilizer experiments and plant growing experiments with tomatoes. N.Y. Cornell.

A study of the fertilizer requirement of tomatoes and cabbage. Penn.

A study of the effects of certain fertilizer treatments on tomatoes and lettuce under glass. Penn.

Tomatoes. (Cont.)

Fertilizer treatments of tomatoes with special reference to the production of dwarf plants, with short internodes, during the warm part of the fall months. Md.

A study of the effect of different fertilizer elements and mixtures of these elements. A comparison of home and commercial fertilizers and rate and methods of application of fertilizers. N.J.

A study of the effect of phosphorus upon the time of maturity, quality, yield, and chemical composition of the tomato fruit. N.H.

An experiment to determine the effects of pruning and staking tomatoes on yield, earliness, size of fruit, etc. N.Y. Cornell.

Factors affecting setting of fruit on the tomato. Okla.

Pollination of forcing tomatoes. N.Y. Cornell.

Relative value of pollination methods of greenhouse tomato varieties. Oreg.

Tomato investigations: Contrast in value of varieties- Grand Rapids Forcing and Bonny Best. Oreg.

Strain tests of Bonny Best tomato. N.Y. Cornell.

Utilization of tomato waste from canning factories. Ark.

Cooperative tomato investigations. Missouri.

Vegetables and truck crops, general.

Studies of heredity in vegetables, especially squashes and tomatoes. N.H.

Breeding and selection of vegetables. Minn.

Breeding experiments with vegetables, to obtain varieties of vegetables adapted to Porto Rican conditions and of good quality and yield. P.R.

Breeding vegetables for North Dakota, to develop new varieties and improve old ones, especially for North Dakota conditions. N.Dak.

The production of more suitable kinds of some of the more important vegetables, by crossing and selection. Also acclimatization and adaptability by growing the plants to the seeding stage under local conditions. Md.

Selections to develop varieties of canning vegetables. Mich.

Variety tests of vegetables. Mont.

Variety tests of vegetables, to see what can be grown. Alaska.

Variety tests of vegetables, to determine hardiest and best varieties for North Dakota conditions. N.Dak.

Vegetables and truck crops, general. (Cont.)

Variety tests of vegetables, to find the varieties best suited to that State. Okla.

Variety tests of vegetables and small fruits. Mich.

Variety testing of tree fruits, small fruits, and vegetables. Idaho.

Variety tests and source of seed tests. Kans.

Variety testing of novelties, or apparently worthy kinds of the most important vegetables. Md.

Tests of new importations of fruits and vegetables introduced by the U.S. Department of Agriculture. S.C.

Fertilizer experiments and variety and strain tests with truck crops. N.Y. Cornell.

Fertilizer and green manure experiments for various truck crops, to determine the profitableness of crimson clover and cowpeas as green manure crops in truck farming, also to study the comparative influence and profitableness of fertilizers in connection with the green manure crops. Tenn.

A study of the fertilizer requirements of cabbage, tomatoes, and potatoes on Dekalb soils. Penn.

Effects of chemicals used as supplements to stable manure on garden crops, viz. nitrate of soda, acid phosphate and sulphate of potash, with special reference to character of growth and early maturity. Mass.

Soil fertility studies from the standpoint of the vegetable grower. Md.

Vegetable growers rotations. Crops variable: ten cords manure y. fertilizer alone. R.I.

Cultural investigations with fruits and vegetables. Kg.

Cultural tests with vegetables, to determine the best planting dates, distance and methods for growing common vegetables in North Dakota. N.Dak.

Straw mulch y. cultivation for nonirrigated gardens. Mont.

A canning crops survey with reference to production cost and cultural methods. N.Y. Cornell.

A comparison of cultivation, irrigation, and mulching on different vegetables. Chic.

Fruits and vegetables for high altitudes. Colo.

Sudan grass, buckwheat, pearl millet, cowpeas, barley, kale, corn, sunflower; millet, planted about July 15, to ascertain which will produce the largest average amount of dry matter for possible humus material after that date. R.I.

Vegetables and truck crops, general. (Cont.)

Greenhouse rotation: Lettuce; lettuce, cucumbers, with sterilization and use of peat. R.I.

Variable cash crops followed by sweet clover, alfalfa, mammoth clover, and by vetch to determine their hardiness and value as green manures and nitrogen fixers. R.I.

Greenhouse rotation: Radishes and spinach (200 more times), tomatoes; manure compost, sand and fertilizer with more and less nitrogen, phosphorus and potassium to determine nutrient requirements. R.I.

Vegetable growers rotations: Beets, followed by clover, by cowhorn turnip, and by soy beans (all three plowed under in fall) and by clover, rye, and by timothy (plowed under in spring), lettuce followed by the same green manure scheme; fertilizer only. R.I.

Vegetable growers rotations: Cabbage-beets, tomatoes-spinach, lettuce-celery, also with beets replaced by rye and vetch, rye and wheat for green manures; and with spinach and lettuce similarly replaced by rape (autumn) and oats (spring); sweet clover and mammoth clover; with 32 tons of stable manure alone, 16 tons of manure and fertilizers having more and less of nitrogen, phosphorus, and potassium, and with no manure with peat to supply organic matter equal to that in 16 tons manure. R.I.

Vegetable growers rotations: Beets-cauliflowers, spinach-carrots, eggplant, also with cauliflower replaced by rye grass and clover for green manure and egg plant followed by rye for green manure; with 31, 16, 8, and 0 tons manure, and fertilizer in each case; more and less nitrogen, phosphorus and potassium; peat; subsoiling; gravelling; horse manure with straw v. sawdust or shavings bedding. R.I.

To determine the possibility of this locality to the production of miscellaneous vegetable crops. (Aberdeen Substation) Idaho.

The suitability of Garrett County for the production of cool-climate vegetables during the summer. Md.

Vegetable irrigation at Davis. Calif.

Vegetables under irrigation, including tomatoes, beans, and cabbage. Oreg.

Irrigation of truck crops. Iowa.

Transplanting investigations with vegetables. Missouri.

Vegetable seed growing. (Market Garden Field Station) Mass.

A study of seed production of garden crops. Ga.

Vegetable seed growing, to produce Alaska grown seed for use of the station and to ascertain if commercial seed growing will be possible. Alaska.

Vegetables and truck crops, general. (Cont.)

To ascertain most suited and profitable varieties of northern and native vegetables. P.R.

Garden vegetable demonstrations. Guam.

The home vegetable garden. Missouri.

Vegetable growing. Virgin Islands.

Canning crops. Utah.

Truck crops survey. Iowa.

Walnuts.

Walnut breeding investigations. (Riverside) Calif.

Walnut pollination and breeding investigations. Oreg.

Propagation of apple, walnut, and sweet cherry by pretreatment of scion wood in place. Penn.

The improving of trees, especially the Black Walnut. To develop more desirable and hardy strains of trees which are only half hardy. N.Dak.

Walnut-oak hybrids. Study of a new form of Juglans californica. Teratology in Juglans californica and allied problems. Calif.

Field trials of fertilizers and green manure crops with walnuts. (Riverside) Calif.

Pecan, English walnut, and almond experiment, to ascertain whether New Mexico climatic and soil conditions are suitable for the growing of these nut trees; to study the different methods of preventing winter injury to the trees; and an investigation on originating, if possible, a late blooming almond. N.Mex.

Walnut grafting investigation. Missouri.

Walnut and pecan studies with special reference to top grafting and climatic and soil adaptation. Ariz.

Sunburning and winterkilling of walnut trees. (Riverside, San Bernardino and Los Angeles Counties) Calif.

Winter injury. (See also Specific fruits)

Frost injury observations. Oreg.

Frost injury. Temperature at which fruit buds are injured. Orchard heating. Utah.

Winter injury investigations. Nebr.

Winter injury. (Cont.)

Winter injury. To determine the best procedure in handling trees injured by the severe winter of 1919-20. (Hood River Branch Station) Oreg.

Freeze injury to orchards, cankers, and miscellaneous troubles. Oreg.

The recovery of fruit trees from serious winter injury. N.Y. Cornell.

A study of the nature, causes, and prevention of winter injury to fruits, with special reference to the apple. N.H.

A study of air drainage and spring temperature variations as affecting frost injury to fruit. N.Mex.

Winter desiccation of fruit trees. Wash.

Miscellaneous.

Breeding of horticultural plants. Utah.

Trials of new varieties. Oreg.

A study of the adaptability of various trees and plants. Fla.

Miscellaneous fruit, vegetable, ornamental, and nursery stock studies. Ariz.

Identification and study of factors determining hardiness and establishing methods to increase it. Missouri.

The conservation of horticultural products. Mass.

The home orchard. Missouri.

To determine the relative value under Massachusetts conditions, of southern and northern grown stock. Mass.

Maintaining an orchard for the testing of fruit trees, obtained through the Office of Foreign Seed and Plant Introduction, U.S. Department of Agriculture. Tex.

Growing of trees and plants of economic or ornamental value for distribution-native and foreign. P.R.

Time of planting and distribution of acreage of eight food crops in Porto Rico, with a view to increase the planting and production of food crops. P.R.

Utilization of horticultural products. Utah.

Horticultural survey of the State. Utah.

The relative response of gooseberries, currants, red and black raspberries, when growing in the same soil, to

SEEDS AND SEED TESTING.

Miscellaneous.

Seed inspection. Md.

Seed testing. Minn.

The improvement of methods and of equipment used in making germination and purity tests of seeds. Iowa.

Examination of seeds for purity and germination. Ohio.

Analyses and germination tests of collected (unofficial) samples. Md.

Analyses and germination tests of collected (official) samples. Md.

Alfalfa seed certification project. Ariz.

Experiments in seed production. Idaho.

The promotion of seed production. Mich.

Increase and distribution of seed. Wash.

Cooperative seed production and distribution. Minn.

Increasing and dissemination of pure bred seeds, to increase and disseminate pure seeds of cereal and forage crops. N.Dak.

Pure seed distribution to increase and distribute pure seed of the various crops which have been improved. (Aberdeen Substation) Idaho.

A study of hard seed of legumes. Iowa.

The distribution of Texas weed pests and the quality of Texas seeds. Tex.

Quality of seeds tested for Iowa farmers. Iowa.

Vitality of buried seeds. Iowa.

Influence of various physical factors on germination tests. Iowa.

The determination of viability of seeds by electrical methods. Mich.

The etiology of the "water sprouts" in germinating seeds. N.Y. State.

Preliminary tests of different fertilizing substances and mixtures on seeds. Ky.

Influence of form and amount of sulphur on growth and development of seed and of sulphur loving plants. Wis.

WEEDS.

Miscellaneous.

Weeds. Minn.

Weed control. Iowa.

Identification of weeds and other plants. Ohio.

Weed seed cases (Seed studies) Minn.

Germination of weed seeds. Iowa.

Spraying of weeds. Wash.

Irrigation water as a disseminator of weed seeds. Colo.

Study of methods of weed eradication. Wis.

Eradication of quack grass. Penn.

Eradication of Canada thistles. Penn.

To determine a practical method of eradicating Johnson grass. N.Mex.

The distribution of Texas weed pests and the quality of Texas seeds. Tex.

The extent to which the weed factor will affect the transpiration of wheat and oats. Iowa.

A comparison of the development of dodder and morning glory. A comparative study of the life history and morphology of these two plants. N.J.

Tests of chemical means and cultural means for the control of wild morning glory, Convolvulus arvensis. Calif.

Critical study in the nutrition of corn. The effect of weeds in robbing the crop at different stages of the corn's development. Ill.

FORESTRY.

Basket willows.

Basket willow test to determine the best variety of commercial willow for Oklahoma. Okla.

Basket willow culture and propagation, to introduce them and study their behavior. Alaska.

Investigations relative to the production of willow withes to be used in furniture and other manufactures. Mich.

Forest arboretums.

Forest arboretums: Testing the adaptability of trees to different soils and in different mixtures. Ohio.

Maintaining an arboretum for testing of forest trees for ornament, shade, windbreak and building purposes. Tex.

Forest management.

Management of the native woodlot. Iowa.

Thinning experiments with catalpa; experiments in the improvements and reconstruction of the native woodlot; and studies of the management of the beach-maple woodlot. Ohio.

Woodlot management. Penn.

Maple sugar and sirup. (See Agrotechny)

Reforestation.

Methods of planting forest trees, adaptability of species for plantations, windbreaks, and shelter belts. Ohio.

Studies in forest regeneration. Minn.

The regeneration of planted woodlots. Iowa.

The reforesting with useful trees, a tract of 200 acres denuded by charcoal burners. P.R.

A study of the underlying principles governing the natural reproduction of forest growth. Vt.

Tree planting, experimental.

Experimental tree planting. Idaho.

Experimental forest plantings. Penn.

Hardy catalpa planting on upland soil; hardy catalpa planting on land subject to overflow; planting Carolina poplar on overflowed lands; underplanting slow growing native hardwoods and white pine; walnut planting on bottom lands; the utilization of wet lands for catalpa production; cottonwood, planting on islands and lowlands; reforestation of waste lands with evergreen trees; forest nursery. Iowa.

Wood, studies of.

Studies of Minnesota woods. Minn.

Relative durability of Idaho woods. Idaho.

Wood, studies of. (Cont.)

Determination of moisture content of different woods under various conditions and their adaptability for special purposes. Penn.

Investigations on the relative durability of fence-post timbers, and a census of the standing timber of the State, its distribution by species with data on timber markets. Ohio.

Studies in the decay of wood. Colo.

Wood collection. Minn.

Miscellaneous.

Varietal tests. Kans.

Growing trees for fence posts, to determine what varieties of trees are best adapted to post, hole, and shade purposes. Okla.

Shingle experiment. Penn.

Lasting qualities of western red cedar shingles nailed with different kinds and number of nails. Penn.

Phenological forestry observation. Penn.

Commercial tree studies, including cottonwood, white pine, European larch, and hardwoods for Iowa. Iowa.

Commercial tree studies: The white ash. Ohio.

Experiments in immature white pine stands. N.H.

Methods of seeding and rate of growth of the different species of pine at the Coast Station. S.C.

The introduction and propagation of forest and shade trees for various regions of Texas. Tex.

The propagation of forest trees, including fertilization and control of fungi. Ohio.

Propagation of junipers and cedar from cuttings. Mich.

Fixation of sand dunes by tree plantings. Mich.

Preparation of volume tables for principal California species. Calif.

Studies in forestry yield and volume. Minn.

The factors influencing the growth and yield of forest trees. N.Y. Cornell.

A study of tolerance of forest trees. Vt.

Miscellaneous. (Cont.)

A study of sawmill costs. N.Y. Cornell.

Experiments in establishing artificial forests of different species in New Hampshire. N.H.

Municipal forestry. Ohio.

Preparation of a manual of the trees, wild and cultivated, grown in Maryland. Md.

Operations on the Waterloo and Dean State forests. Ohio.

Forest trees of Minnesota. Minn.

Sylviculture studies at Itasca Park. Minn.

Forest surveys of Scioto and Pike Counties. Ohio.

Forest survey. Iowa.

Field observations in forestry. Penn.

DISEASES OF PLANTS.

Alfalfa diseases.

Alfalfa diseases: Investigations of the life history of the causative organisms and the effect of environmental factors, such as temperature and water content of the soil. La.

Occurrence and injuries from diseases of alfalfa and clovers. Ohio.

Apple diseases.

Relative value and safety of copper-containing sprays and other materials in early applications for apple tree anthracnose control. Oreg.

Studies in the black rot of apples. Penn.

Black root rot of the apple. Va.

Apple ring rot. Ark.

Root rot of apples in Delaware. Del.

Apple blister canker. Nebr.

Blister canker of apple trees and its control. N.Y. State.

Treatment of apple canker disease. Missouri.

Investigations for the control of the Illinois blister canker of the apple. Iowa.

Apple diseases. (Cont.)

Relation of water content of apple branches to the parasitism of blister canker fungus, Nummularia discreta. N.Y. State.

The relation of insects to the development and spread of the blight organism in apples and pears. Ohio.

Apple collar blight, to determine the cause and the most practical method of control. W.Va.

Studies of the apple blotch. Penn.

Apple blotch investigations, to determine the effect of dormant sprays upon the apple blotch fungus within the cankers and upon the subsequent development of the disease on fruit and young wood. Ind.

A test of spray control measures for apple blotch disease, at Fleming. Testing of apple sprays at Carpenter. Ohio.

Effect of crown gall and nematode on growing apple trees. Ga.

Bacteria in crown gall of the apple. Iowa.

Apple rust. Penn., W.Va.

Apple scab and its control. Wis.

Spraying investigations: Relative value and safety of dilute, lime sulphur sprays, ordinary lime sulphur, dry lime sulphur, sulphur dust and certain copper combinations for apple scab control. Oreg.

Orchard spraying experiments to obtain light on the fungicidal action of the arsenate of lead in controlling apple scab. (Highmoor Farm) Maine.

"Small pox" bark disease of apple branches. Ohio.

On the comparative value of dusting with lime sulphur (with and without the use of nicotin) and spraying with Bordeaux mixture and lead arsenate for the control of insects and fungi which injure the apple crop. Conn. State.

Dusting v. spraying, to determine the efficiency of dust methods of control of insects and fungus diseases of the apple. Ind.

Comparison of dusting and spraying for the control of insects and diseases on the apple. W.Va.

Field experiments in spraying, with special emphasis on the control of apple blotch as it affects summer varieties of apples. Ill.

Apple leaf diseases, to determine manner of overwintering, time and condition of infection, and methods of control. W.Va.

Cold storage diseases of apples. Ohio.

Avocado diseases.

Avocado diseases- notably fruit spotting and avocado scab. Fla.

Barberry diseases.

A verticillium disease of the cultivated barberry. Ohio.

Barley diseases. (See also Cereal diseases, general)

Barley smut. Wash.

Diseases of barley in Wisconsin caused by Helminthosporium, and their control. Wis.

Cereal disease investigations with barley. Iowa.

Bean diseases.

Experimental spraying of beans for control of anthracnose. Mass.

Bean bacteriosis and anthracnose. Minn.

Studies on the bacterial blight of beans. N.Y. State.

Investigations on the bacterial blight of beans and other bean diseases. N.Y. Cornell.

Investigations on the bacterial disease of the lima beans. N.Y. Cornell.

Various phases of the bean mosaic problem. N.Y. Cornell.

Bean rust, to determine whether the rust of beans (Uromyces appendiculatus) can be carried from one crop to the next through seed. Ind.

To study the principal diseases of beans in the State and to perfect methods of control. Okla.

Investigation relating to bean diseases. Mich.

Blackberry diseases.

Diseases of small fruits, especially raspberries and blackberries. Ohio.

To determine the facts with reference to the life history and pathology of the orange rust of blackberries and raspberries. Ind.

Botrytis diseases.

Studies on Botrytis diseases. N.Y. Cornell.

Cabbage and cauliflower diseases.

Blackleg of cabbage and other diseases not including yellows. Iowa.

Cabbage and cauliflower diseases. (Cont.)

Investigation of the cause and control of black rot, yellows, blackleg, and club root of cabbage. Wis.

Control of club root. Penn.

Club root of cabbage and allied plants. A study of disease resistance and of soil treatment. Vt.

Cabbage breeding for the control of yellows. Iowa.

Testing of yellows resistant selection of cabbage and tomatoes resistant to Fusarium wilt at Clyde, Ohio. Ohio.

Diseases of cabbages. N.Y. Cornell, Tex.

Diseases of market garden crops, especially cabbage, eggplants, and potatoes. N.Y. Cornell.

Cabbage disease investigation, to determine the relative economic importance of the various cabbage diseases in the market, garden and kraut crops of cabbage in Indiana with particular reference to yellows, club root, blackleg, black root and early blight. Ind.

Diseases of cauliflowers. N.Y. Cornell.

Cantaloup and muskmelon diseases.

Study of bacterial wilt, soil wilt, and leaf spot of watermelons, cantaloups, and cucumber. Del.

Cucurbit disease investigations, to ascertain the relative economic importance of anthracnose, Fusarium wilt, and blossom end rot of the Indiana watermelon crop, the relative importance of anthracnose, Alternaria leaf blight, and mosaic in the muskmelon crop of Indiana, and to study methods of control and the efficacy of seed treatment. Ind.

Carrot diseases.

Investigation of a carrot blight. Mass.

Celery diseases.

Investigation of bacteriosis of celery. N.J.

Experimental spraying of celery for late blight control. Mass.

Investigations relating to celery diseases. Mich.

Cereal diseases, general. (See also Specific grain).

A bacterial disease of cereals. Ark.

Bacterial diseases of grain, grasses, and soy beans and their control. Wis.

Cereal diseases, general. (Cont.)

Ergot of cereals. Minn.

Rust of cereals. Minn.

Investigations on grain rust. Wis.

Cereal leaf rust disease investigations, to determine, with reference to leaf rusts of wheat, barley, and rye, their life history, fixity to hosts, biological forms, if any, and the relation of these to forms found on other related wild or cultivated grasses: Factors involved in their dissemination; virulence on different varieties, a study of physiological and ecological factors in relation to host and parasite and an investigation of the possibilities of control through the development and by the selection or breeding of disease-resistant varieties or strains. Ind.

Stem rust of cereals, to determine whether or not the stem rust of cereals (*Puccinia graminis*) may live over the winter in Uredinal stage in straw stacks under Indiana conditions and the bearing of this on the problem of dissemination of the stem rust. Ind.

Study of environmental conditions influencing the development of stem rust in the absence of an alternate host (barberry). Nebr.

Stem rust of cereals. Oreg.

Stripe rust of cereals and grasses. Oreg.

Life cycle studies, to determine the facts with reference to the sequence of spore forms in certain autoecious rusts. Ind.

An extensive study of the life history of the rusts. Conn. State.

A study of rust resistance in small grains. S.C.

Rust and smut control in wheat and other cereals and grasses, to investigate the life histories and characteristics of the rusts and smuts of cereal grains and grasses; to determine their chief modes of attack, the conditions under which they are most destructive and to establish proper methods of control. N.Dak.

Scab of cereals. Minn.

Grain smuts investigation and control, to determine the influence of moisture content of soil, composition of soil, and temperature of soil with reference to organic matter, etc. on the entrance of smuts of cereals. Missouri.

Studies of the behavior of and control methods for wheat rust, wheat, oats, and sorghum smuts; and corn smut and root rot. Kans.

Smut treatments. Minn.

Cereal diseases, general. (Cont.)

Cereal disease investigations, primarily stinking smut. (Moro Branch Station) Oreg.

Diseases of wheat, oats, and rye. Special percentage count of diseases of wheat and oats; tests of methods of seed treatment of wheat; anthracnose disease of cereals. Ohio.

Cereal diseases: Comparative studies of various methods of seed treatment and types of seed and seedling injury. Oreg.

Imperfects on cereals and roots. Minn.

Barberry eradication. Minn.

Cherry diseases.

A bacterial disease of the Wragg cherry. Colo.

Spraying experiments for the control of the cherry leaf spot (Cylindrosporium podi). N.J.

Leaf spot of cherry and plum and its control. Wis.

Citrus diseases.

Citrus blast. Calif.

Citrus canker. Ala.

Soil and nutrition studies with reference to dieback of citrus. Fla.

Melanose of citrus. Fla.

Gumming diseases of citrus. Fla.

Citrus scab, to study the habits and control of the citrus scab fungus. P.R.

Citrus diseases, notably, gumming, melanose and stem end decay, anthracnose and blight. Fla.

To determine the causes of loss in citrus fruits and pineapples exported from Porto Rico. P.R.

Clover diseases.

Investigation of the nematode disease of red clover in southern Idaho. Idaho.

Occurrence and injuries from diseases of clovers and alfalfa. Ohio.

Coconut diseases.

To determine cause, distinctive symptoms, and control of coconut stem disease. P.R.

Coffee diseases.

Stilbella flavida control in coffee. To find a practical means of controlling or destroying Stilbella. P.R.

To study the cause of a root disease of coffee and the control of the Stilbella leaf spot. P.R.

Corn diseases.

Fusarium diseases of corn. Iowa.

Investigations of "Frenching" diseases of corn together with methods of control for same. Ky.

Root rot of corn. N.Y. Cornell.

Field studies of the occurrence and losses from corn root rot. Ohio.

A study of the root rot of corn, including a study of the casual organisms in relation to this and other hosts, environmental factors, and methods of control. N.J.

Corn root-rot, its control and relation to wheat scab. Wis.

Root and stem rots of corn. La.

Root, stalk, and ear rots of corn. Ind., Penn.

Corn root, ear, and stalk rots. Selection and breeding for disease resistance, also genetic studies in connection with disease resistance. Ill.

A study of corn root diseases. S.C.

Corn smut. Minn.

Corn disease investigations, to assist and promote investigations on certain corn crop losses and the diseases responsible therefor; to determine the facts relative to the distribution of these diseases; to develop and test control methods and to breed disease-resistant strains and varieties. Ind.

Cereal disease investigations with corn. Iowa.

Cotton diseases.

A study of cotton anthracnose. S.C.

A study of the bacterial diseases of cotton. S.C.

Cotton diseases. (Cont.)

Effect of alkali on the resistance of Egyptian cotton to black arm. Ariz.

Effect of alkali on the resistance of Egyptian cotton to Ozonium omnivorum. Ariz.

Cotton rust experiments, to determine the effect of salt as compared with potash in preventing cotton rust on Mecklenburg clay loam soils. N.C.

Cotton wilt: Investigations of the life history of the fungus, and test of wilt resistant varieties. La.

A study of miscellaneous cotton diseases. S.C.

Cranberry diseases.

Fungus diseases of the cranberry: Studies from a technical standpoint (fungi and their development) carried on in cooperation with the Bureau of Animal Industry, U.S. Department of Agriculture; testing of sprays for control of fungus diseases; studies of cranberry storage and shipping conditions; a study of bog management in this connection. (Wareham Station) Mass.

Crown gall.

Crown gall investigations. Iowa.

Study of the comparative infectiousness of the crown gall organism (Bacterium tumefaciens), with special reference to finding resistant forms of prunus suitable as a root stock for the various stone fruits. Calif.

Cucumber diseases.

Study of bacterial wilt, soil wilt, and leaf spot of watermelons, cantaloups, and cucumber. Del.

Experimental spraying for control of cucumber mildew under glass. Mass.

Cucumber nubbins. Minn.

Investigations of cucumber diseases. Mich.

Cucumber diseases and their control. Wis.

Studies of the cucumber mildew. W.Va.

Date diseases.

Studies of *Alternaria*, *Penicillium*, and *Aspergillus* as date rots. Ariz.

Disease resistance.

Plant nutrition and its relations to parasitism involving a study of the causes and relationship of attack and mode or causes of resistance to attack of parasitic fungi in flax, cereals, and associated crops. N.Dak.

The biochemistry of disease resistance in plants. Minn.

Biologic specialization of parasitic fungi in relation to disease resistance in plants. Colo.

Tests of quality of disease resistant hybrid wheats. Minn.

Eggplant diseases.

Investigations of the life history of the fungus, methods of dissemination, and possible control by seed treatment and spraying. La.

Phomopsis of eggplant. Fla.

Eggplant wilt. N.J.

Diseases of market garden crops, especially eggplants, cabbage, and potatoes. N.Y. Cornell.

Flax diseases.

Flax rust. Minn.

Flax wilt. Minn.

Flower diseases.

Investigation of control measures for a stem canker of roses caused by the fungus Cylindrocladium scoparium. Mass.

Investigations on some diseases of gladioli and roses. N.Y. Cornell.

Snapdragon rust and its control. N.H.

Investigations of Antirrhinum rust. Mass.

Forage crop diseases.

The control by seed treatment of certain pathological organisms causing diseases of certain southern forage crops, with special reference to the leaf spot and anthracnose of bur clover, the blight (Ascochyta and Proto-coronospora) of vetch, the bacterial blight of soy bean, and the anthracnose of Sudan and Johnson grasses. Ala.

Forest and shade tree diseases.

White pine blister rust. Minn.

Studies in white pine blister control. Minn.

Forest and shade tree diseases. (Cont.)

Special study of the pine blister rust with reference to method of infection of white pine, the course of its development within the pine and the susceptibility of other species of pine to experimental infection. Conn. State.

Investigations of white pine blister rust. Mass.

Blister rust of conifers. Penn.

New disease of white pine. N.Y. Cornell.

A branch disease of white pine and other evergreens. Ohio.

A root rot of white pine, possibly associated with an audophytic fungus. Ohio.

An unidentified root rot and a sclerotial leaf disease of the catalpa. Ohio.

Oak and other cankers. Minn.

A new disease of the tulip poplar in the nursery of the Forestry Department caused by a verticillium. Ohio.

Damping off of coniferous seedlings. Minn.

Miscellaneous Itasca experiments. Minn.

Fruit diseases.

Dusting for control of fruit diseases. N.Y. Cornell.

Studies of fruit rotting Sclerotinia. Md.

Fruit tree diseases.

Investigation of brown bark spot disease of fruit trees. Mont.

The relation of insects to the transmission of fire blight. Ohio.

Fruit tree cankers. Minn.

A study of heart rots of orchard trees and methods of prevention. Survey in stone fruit orchards and experiments on efficiency of copper nails in the disinfection of pruning cuts. Oreg.

Fruit tree root rot investigations. A study of Armillaria root rot. Oreg.

A study of rosette of Prunus. Ga.

Bark and wood diseases of orchard trees. Mont.

Fruit tree diseases. (Cont.)

Investigation of physiological disorders of orchard trees, such as "spring injury" and "die-back". Oreg.

Diseases of orchard and small fruits, especially apple blotch, apple blister canker, Grimes disease, raspberry, anthracnose, and crown gall in its relation to the raspberry. Ill.

Fungicides. (See also Entomology, insecticides.)

Toxic action of fungicides on parasitic fungi. N.H.

Stimulating influence of Bordeaux mixture on potato plants. N.J.

The effect of fungicides and insecticides on plants. N.H.

Fusarial diseases.

The Fusarial diseases of plants. Missouri.

Fusarium diseases of truck crops. Minn.

Fusaria causing wilt in Tennessee. Tenn.

Grass diseases.

Bacterial diseases of grasses, grain, and soy beans, and their control. Wis.

Stripe rust of cereals and grasses. Oreg.

Rust and smut control in wheat and other cereals and grasses, to investigate the life histories and characteristics of the rust and smuts of cereal grains and grasses; to determine their chief modes of attack, the conditions under which they are most destructive and to establish proper methods of control. N.Dak.

Horseradish diseases.

Investigation of horseradish root rots, to determine their control by selecting disease-free roots for planting and the efficiency of controlling the root rots with corrosive sublimate and formaldehyde treatments. N.J.

Leaf roll diseases.

Studies on leaf roll diseases. N.Y. Cornell.

Lettuce diseases.

Control of downy mildew of lettuce. Iowa.

Investigations of methods for controlling lettuce drop. Mass.

Lettuce diseases. Tex.

Lettuce diseases. (Cont.)

Diseases of lettuce. N.Y. Cornell.

Investigations on the diseases of lettuce, particularly bottom rot and blights. N.Y. Cornell.

Mosaic diseases. (See also Specific crops)

A detailed study of mosaic of plants. Ga.

Mycosphaerella.

Life histories and classification of the fungus genus Mycosphaerella. Md.

Oat diseases. (See also Cereal diseases, general).

Oat rust investigations. Iowa.

Oat smut. Wash.

Cereal disease investigations with oats. Iowa.

Onion diseases.

Black neck rot and smut of onions, and a new black mold onions in storage. Ohio.

Onion smut control investigations. Oreg.

Storage rots of onions. Tex.

Diseases of onions. N.Y. Cornell.

Investigation of onion diseases. Mass.

Onion disease investigations, to determine which of the onion diseases are limiting factors in the yield and market value of the onion crop of Indiana. Ind.

Onion diseases and their control. Wis.

Pea diseases.

Investigations of pea blight. Wis.

Pea root rot in Delaware and its control. Del.

A study of the root rot of the pea, including a study of the causal organisms in relation to this and other hosts, environmental factors, and methods of control. N.J.

To determine the causes and to select strains resistant to root rot of peas. Md.

Pea diseases. (Cont.)

An inquiry into some of the soil, fertilizer and crop rotation conditions that may induce or aggravate the wilt disease of the garden pea. Md.

Peach diseases.

Means for the control of bacterial spot of the peach. Va.

A study of the habits and control methods of the brown rot and curculio of peaches in Georgia. Ga.

A comparative study of the peach cankers, with special attention to the distribution of the causal organisms. N.J.

Spraying investigations. Relative value of different spraying dates for peach leaf curl control. Oreg.

Relative effectiveness of copper sprays and sulphur sprays for peach leaf curl control. Oreg.

Study of the cause of little peach, peach yellows, or rosettes. Del.

Continued study of peach yellows. Conn. State.

Peach diseases. Utah.

Peach spraying for control of curculio and associated insects and diseases. N.C.

Pear diseases.

A study of the causes for resistance of certain species and varieties of pears to fire blight. Oreg.

The relation of insects to the development and spread of the blight organism in pear and apples. Ohio.

Relative resistance or susceptibility to pear blight of all known species of Pyrus. (Talent Branch Station) Oreg.

Pear blight control, with special emphasis on horticultural methods. Calif.

Breeding pears for resistance to pear blight. Ga.

Spraying experiments for the control of the pear fruit and leaf spot. N.J.

Pecan diseases.

Study of a pecan disease. Fla.

Pepper diseases.

Investigation of fruit rot of peppers. Ga.

Pepper diseases. (Cont.)

Sclerotium wilt of the pepper. Investigations of the life history of the fungus, effect of environmental factors; survey of host plants affected. La.

Disease of the chili pepper. N.Mex.

Pineapple diseases.

Investigation of pineapple wilt. Fla.

To determine the causes of loss in citrus fruits and pineapples exported from Porto Rico. P.R.

Plant disease survey.

Plant disease survey. Ark., Minn., S.C., Tex., Wash.

Plant disease survey work. Penn.

Plant disease survey. Records annually, through correspondence and observations as to prevalence and severity of plant diseases through Oregon. Oreg.

Plant disease survey of Virginia. Va.

Plant disease survey. Special attention given to diseases of the sugar beet. Utah.

Plum diseases.

Leaf spot of cherry and plum and its control. Wis.

Potato diseases, Irish.

Investigations of blackleg and other diseases of the potato. Mich.

Bacterial blight of Solonaceae. Fla.

Dusting y. spraying of potatoes for the control of blights and insect pests. N.Y. State.

To determine the effect of strength of Bordeaux mixture on the number of applications required to give the best control of late blight. N.H.

Potato leaf roll. Its cause. Control by selection. (Aroostook Farm) Maine.

Studies upon the leaf roll of potato. Penn.

Communicability of leaf roll of potato. Penn.

The control of the potato leaf roll by roguing. N.Y. State.

Potato diseases, Irish. (Cont.)

Potato disease investigations, particularly upon the nature and control of leaf roll and mosaic. N.Y. Cornell.

Preliminary studies on the cause, distribution and importance of leaf roll, mosaic disease, net necrosis, and similar troubles of potatoes in Maine. Maine.

A study of leaf curl, leaf roll, and rosettes and related diseases of the potato plant. Nebr.

Degenerative diseases of potatoes. An attempt to determine the possibility of detecting the presence of mosaic leaf roll, and other foliage degenerative diseases by the inspection of the seed. Vt.

Potato mosaic: Investigations including its transmission; immunity or resistance, effect of fertilizer variation, its economic importance, the relation of potato mosaic to other forms of potato disease and to mosaic of other plants, and control measures. (Aroostook Farm) Maine.

The production of mosaic free seed potatoes. (Highmoor Farm) Maine.

Potato net-necrosis and leaf roll. Culture and histological work, to determine the relationship of the two diseases. (Aroostook Farm) Maine.

Rhizoctonia disease of potatoes. Maine.

A study of the life history and parasitism of Rhizoctonia as related to Irish potato diseases. Nebr.

Experiments in the control of Rhizoctonia of the potato. Idaho.

The potato scab. Vt.

Etiology of potato scab in Nebraska. Nebr.

Investigations of the use of elemental sulphur for the control of Actinomyces chromogenus G, the cause of common scab of the Irish potato. N.J.

Spindling sprout disease of the potato tuber. Md.

The apple leaf hopper in relation to tip burn of potatoes. N.Y. State.

The potato wart diseases and its control. Penn.

Wart disease of the potato. A campaign of education relative to the disease and the importance of keeping it out of Maine. Maine.

A study of Fusarium wilt in potatoes. N.Dak.

An investigation of species of Fusarium in relation to field wilt and rotting of potato tubers. Mont.

Potato diseases, Irish. (Cont.)

Environmental conditions as related to the infection and progress of Fusarium wilt and tuber rot of potatoes. Nebr.

Potato wilt: To determine the efficiency of roguing and hill selection in the control of the disease. (Aroostook Farm) Maine.

Verticillium wilt of potatoes. Oreg.

A study of "calico" and "streak" diseases of potatoes. Idaho.

Little potato disease. Why little potatoes only, were produced. Mont.

Storage rots of Irish potatoes. Tex.

Dry storage rot of potatoes caused by Fusarium coeruleum. Oreg.

Irish potato diseases and storage. Tex.

Seed potato treatment for control of black scurf. Penn.

Potato seed disinfection. Ind.

Seed treatment of Irish potatoes. Ark.

Detailed experiments in seed treatment and spraying potatoes. Ohio.

Potato diseases and seed potato disease examination. Ohio.

Potato diseases in relation to seed and crop production. Iowa.

Potato diseases. Minn., Utah, Wis., N.Y. Cornell.

Potato disease work at Highmoor: Mosaic, net necrosis and spindling sprout, and Rhizoctonia resistance. (Highmoor Farm) Maine.

Potato and garden truck diseases. Minn.

Investigations on some peculiar potato diseases. N.Y. Cornell.

Potato disease investigations. To determine which potato diseases are limiting factors in the production and market value of the potato crop in Indiana and to determine the effectiveness of seed disinfection and spraying as a control measure for potato diseases in the State. Ind.

Diseases of market garden crops, especially potatoes, eggplants, and cabbage. N.Y. Cornell.

Control of foliage diseases of the potato by application of Bordeaux mixture. N.J.

Raspberry diseases.

Diseases of small fruits, especially raspberries and blackberries. Ohio.

Raspberry diseases. (Cont.)

To determine the facts with reference to the life history and pathology of the orange rust of blackberries and raspberries. Ind.

Rhubarb diseases.

A rhubarb disease. Penn.

Rice diseases.

Diseases of rice. "Straight head". (Rice Experiment Station, Crowley) La.

Root knot.

Investigation of the root-knot nematode and its relation to various host plants. Ga.

Root knot control. Ark.

Control of nematode root knot. Fla.

Root rot diseases.

Root rot diseases of New Mexico crops. To obtain information as to the cause, nature, and control of these diseases. N.Mex.

Texas root rot investigations. Tex.

A study of the Texas root rot fungus. Ariz.

Rye diseases. (See also Cereal diseases, general).

Control of nematode disease of rye. Va.

Sclerotinia.

Life history of Sclerotinia cineria, with special attention to the blossom blight form and to the relation of the cankers to infections. N.J.

Sclerotium rolfsii.

Investigations into the life history and parasitism of Sclerotium rolfsii. Ga.

Seeds, as disease carriers, treatment, etc. (See also Diseases of specific crops).

Seed treatment of cereals. Ark.

Seeds as carriers of bacterial and fungus plant diseases. N.Y. State.

Control of plant diseases by treating seed with active schlorin. Ark.

To find diseases that are carried in the seed and means of disinfecting seed-carrying parasitic diseases, and to study the trouble due to immaturity. Md.

Small fruits, diseases of.

Cane fruit disease investigations with special reference to anthracnose and crown gall. Wis.

Diseases of small fruits, especially raspberries and blackberries. Ohio.

Diseases of small fruits and methods of control. Minn.

Diseases of orchard and small fruits, especially apple blotch, apple blister canker, Grimes disease, raspberry, anthracnose, and crown gall in its relation to the raspberry. Ill.

Sorghum diseases. (See also Cereal diseases, general).

Sorghum smuts and methods of control, to compare the two common smuts, kernel and head, of the sorghum group and determine methods for their control. Okla.

Soy bean diseases.

Bacterial diseases of soy beans, grasses, and grain, and their control. Wis.

A study of a little known bacterial disease of soy beans with special reference to cause, symptoms, dissemination, cultural and inoculation studies, relation to leaf spot of velvet beans and other legumes, and means of prevention and control. N.C.

An experimental study of infection of soy bean by Fusarium tracheiphilum growth. Tenn.

Spinach diseases.

Spinach diseases. Tex.

Stone fruits, diseases of.

Special studies of the bark disease organism of stone fruits. Ohio.

Sugar beet diseases.

Special attention given to diseases of the sugar beet. Utah.

Investigations on the curly top disease of the sugar beet. Calif.

Sugar cane diseases.

Sugar cane diseases, including mottling disease or mosaic. A study of the life history of the organisms causing the various diseases, the effect of the different fungi on the germination of cane, effect of treating canes with disinfectants to increase the germination, distribution of the mottling disease in the State and a study of its cause, methods of dissemination and possible control. La.

Sugar cane diseases. (Cont.)

To determine if insects transmit mottling disease in sugar cane, and if so, what insects. P.R.

Sunflower diseases.

Fungus diseases of the sunflower. Colo.

Sweet corn diseases.

Sweet corn investigations: Corn stalk disease. Iowa.

Sweet potato diseases.

Mosaic of sweet potatoes. Ark.

Investigation of the rot diseases of the sweet potato. Del.

Sweet potato disease investigations, especially stem rot and its control by seed selection, sterilization of seed beds, etc. N.J.

Sweet potato diseases and storage. Tex.

Varieties of sweet potatoes best suited to the section and also a study of the control of various diseases. Okla.

Tobacco diseases.

Tobacco diseases, including "wildfire" and angular leaf spot. Va.

A disease of tobacco first called speck and later designated as tobacco wildfire. The study includes the etiology, symptomatology, factors influencing infection, agents of dissemination, manner of hibernation, hosts, cultural studies of the organism, and experiments on prevention and control. N.C.

A study of leaf spot diseases of tobacco. Wis.

Investigations of "must" of tobacco. Wis.

Study of the root rot of tobacco Thielavia basicola. Conn. State.

Investigations of the root rot disease caused by Thielavia, including development of Wisconsin strains of tobacco resistant to root rot; development of root-rot resistant White Burley tobacco for Kentucky and other districts; relation of rotation of host plants and non-host plants of Thielavia on the severity of the Thielavia root rot disease of tobacco; and inheritance of disease resistance in tobacco to the root-rot disease caused by Thielavia. Wis.

A study of tobacco root rot in Georgia. Ga.

The steaming of tobacco beds for the prevention of root rot. Ohio.

Tobacco diseases. (Cont.)

Investigation of the Fusarium root-rot of tobacco. Wis.

Investigation of the Fusarium wilt of tobacco. Wis.

Investigation of the "shed burn" of tobacco. Wis.

A study of so-called tobacco sickness and tobacco sick soils. Mass.

Tobacco diseases investigations. Ky.

A survey of tobacco diseases in Connecticut. Conn. State.

Tomato diseases.

Tomato bacterial spot or canker. Ind.

Tomato blight. Md.

Experiments in the control of the western yellow tomato blight by breeding and selection. Idaho.

Tomato diseases, including western yellow blight and tomato mosaic. Oreg.

Tomato blight and related diseases. Wash.

Winter blight of tomatoes. Penn.

Studies upon the Septoria leaf spot of tomatoes. Penn.

A Phytophthora disease of tomatoes. N.Y. Cornell.

Control of leaf blight of tomato, to devise practical methods for controlling Septoria leaf blight of tomato under field conditions. Md.

Tomato diseases, especially Septoria leaf blight and the Phytophthora blight, and means for the control of these diseases. Va.

Tomato spray experiments for control of leaf blight (Septoria lycopersici). N.J.

Control of Septoria leaf spot of tomato. Ind.

Blossom end rot of tomatoes. N.Y. Cornell.

Studies on the canker disease of tomatoes. Penn.

Tomato mosaic. Minn.

Tomato mosaic control. Ind.

The dissemination of the mosaic disease of tomatoes by insects. -To find some insect that may be instrumental in the spread of the mosaic disease from the ground cherry to the tomato. Ind.

Tomato diseases. (Cont.)

Stem rot of tomato and its control. Del.

The Fusarium wilt of tomatoes. Ga.

Tomato wilt: The investigation of the life history of the fungus causing the disease; a comparison with the Fusarium species causing other wilt diseases, effect of environmental factors such as temperature, etc. on the development of the disease, a test of wilt resistant varieties, selection for wilt-resistant strains. La.

Resistance of tomato to Fusarium wilt. Tenn.

Tomato wilt diseases and soil sterilization of plant beds and greenhouses. Selection of resistant strains of tomato plants. Ohio.

Investigation of the cause or causes of wilt disease of tomato and selection of resistant strains. Tenn.

Fusarium wilt resistant tomatoes. To secure strains of canning tomatoes that will yield well on land infected with the wilt fungus prevalent in Maryland. Md.

Propagation of wilt resistant strains of tomatoes. Ark.

Testing of yellows resistant selection of tomatoes and cabbage resistant to Fusarium wilt at Clyde, Ohio. Ohio.

To determine which tomato diseases, other than the Fusarium wilt and the Septoria leaf spot are limiting factors in the production and market value of the tomato crop in Indiana; whether or not certain disease-producing fungi, especially the form causing Septoria leaf spot are carried with the seed; the source of the primary infection of Septoria leaf spot, whether due to infestation of seed, seed bed and hot bed or field soil, with special reference to origin of the disease in the field (diseased or contaminated transplants), over-wintering of fungus in the field or spread from neighboring fields, the mode of spread of Septoria leaf spot in the field (rain water, surface drainage water, wind, cultural practices) and the possibility of control of Septoria leaf spot. Ind.

Tomato diseases. Tex., W.Va.

Tomato breeding for disease resistance. Del.

Tomato spraying for control of fungus diseases. Del.

Vanilla diseases.

To determine the cause and control of the serious diseases of vanilla in Porto Rico. P.R.

Vegetable diseases, general.

Potato and garden truck diseases. Minn.

Walnut diseases.

Walnut blight, investigation for control. (Riverside, Whittier, Anaheim, and Montalvo) Calif.

Watermelon diseases.

Diseases of the watermelon and their control in Texas. Tex.

Cucurbit disease investigations, to ascertain the relative economic importance of anthracnose, Fusarium wilt, and blossom end rot of the Indiana watermelon crop, the relative importance of anthracnose, Alternaria leaf blight, and mosaic in the muskmelon crop of Indiana and to study methods of control and the efficacy of seed treatment. Ind.

Study of bacterial wilt, soil wilt and leaf spot of watermelons, cantaloups, and cucumber. Del.

Wheat diseases. (See also Cereal diseases, general).

Control of loose smut of wheat. Va.

The relation of soil moisture content to bunt or stinking smut infection in wheat. Idaho.

Varietal resistance of wheat to stinking smut. Oreg.

Wheat smut: Methods of control. Seed treatment.--To determine the cause of, and possible methods of controlling various forms of smut explosions and the possibility of catching and destroying a large percentage of the smut at the threshing machine in an effort to reduce the amount of soil contamination. Wash.

Control of nematode disease of wheat. Va.

Investigation of the foot-rot of wheat, from some as yet unknown cause, but supposed to be the Australian "Take-all". To find means to prevent the spread of the disease and to overcome it in the localities where it appears. Ill.

Corn root-rot, its control and relation to wheat scab. Wis.

To determine the effect of hot water treatment of seed wheat, on yield, on the seed-borne diseases of wheat other than loose smut and as a possible stimulant independent of disease control. Ind.

Study of certain wheat diseases as related to the deterioration of wheat and the reduction in yield. Tenn.

Life history and relations of imperfect fungi to soil and seed in wheat cropping. N.Dak.

Cereal disease investigations with wheat. Iowa.

Wheat diseases. (Cont.)

Yellowberry in wheat. The cause of yellowberry in Turkey Red wheat in the Columbia Basin. Oreg.

Yellowberry in Montana wheat. Cause and control. Mont.

Miscellaneous.

Fire blight. Wash.

Chlorosis troubles.-To ascertain the best method of restoring the usual green color of trees and vines affected with chlorosis. N.Mex.

Life history and cultural studies, to determine through field observations and through greenhouse and field infection experiments, the life history of certain rusts and to contribute to the knowledge of the facts with reference to biological forms and to the influence of the host on the morphology of the rust. Ind.

To increase our knowledge of plant rusts through studies of their life history, morphology, cytology, physiology, taxonomy, with special reference to those phases of the subject that will contribute to a better understanding of the general biology, phylogeny, and pathology of the group. Ind.

Rust investigations. To describe all species of rust, occurring in North America, including Central America, the Canal Zone, and the West Indies, which have not been previously published. Ind.

Study of soil temperature and climatic conditions in their relation to the prevalence of important plant diseases in Texas. Tex.

Relation of soil temperature to soil parasites and other organisms, including cabbage yellows, flax wilt, tomato wilt, potato Rhizoctonia, legume tubercles. Wis.

Studies on the life histories and taxonomy of the Sphaeriales. N.Y. Cornell.

Fungus disease investigations. Colo.

Relation of parasitic fungi and bacteria to their host plants. Va.

Study of the more serious fungus diseases of greenhouse crops. Ill.

Study of the effect of various fertilizers on the prevalence of fungus diseases. Conn. State.

Studies of plant nutrition with reference to physiological diseases. Fla.

Investigations in pathology and control of root and seed infecting diseases, particularly of flax, cereals, and small grains. To establish the relationship of root and seed infecting diseases of small grains and farm

Diseases of plants, miscellaneous. (Cont.)

crops of North Dakota, particularly of flax, cereals, and grasses, to the methods of cropping and to determine means of control, and to prevent accumulation thereof in the seed and in the soil. N.Dak.

Plant disease control. Mass.

Dipping nursery stock in copper sulphate. Calif.

Seed bed diseases. Fla.

Insect vectors of plant diseases. N.Y. Cornell.

Selection of plants, to determine the possibility of eliminating certain physiological diseases from greenhouse crops. Ill.

Study of plant pathogenes from the point of view of their biological characteristics. Mich.

Minor plant diseases, including crown gall of fruit trees, disorders due to climatic and soil conditions, nematode (eel worm) disease of strawberry and clover, bean mosaic, black rot, and frog-eye leaf spot of apples, blossom and spur blight. Sunflower stem rot. Oreg.

Routine examination of material sent to the citrus experiment station and minor studies in mycology and bacteriology. (Riverside) Calif.

Minor pathological problems. Mich.

Miscellaneous diseases of trees and crops. Iowa.

Miscellaneous plant diseases. Kans.

Investigation of plant diseases in Hawaii, to identify the principal plant diseases and develop methods for their control. Hawaii.

ECONOMIC ZOOLOGY.

(See also Veterinary medicine- parasites, and Entomology- mites and red spiders).

Bird pests.

Investigation and control of injurious insects, mammals, and birds. Mainly on wireworms, grasshoppers, and white grubs. Nebr.

Crow control, to determine kinds of food and feeding ranges, roosting and nesting habits, range of egg laying, incubation and development, approximate benefit, damage done, and methods of control. Okla.

Crawfish.

A systematic and biologic study of the crawfish of Mississippi, with special reference to species injurious to agriculture, and to the means of controlling them. Miss.

Earthworms.

Earthworm investigation.--Their effect on puddling soil. Mont.

Fish.

The life history of the blacknose dace (Rhinichthys atronasmus). N.Y.
Cornell.

Nematodes. (See Plant diseases, root knot).

Rodent and other mammal pests.

The natural history of the lowland marmot. Wash.

The pocket gopher (Kromomys bulbivorus). Life history, nature, and extent of damage to crops, suitable bait for poisoning, poisoning in field and in captivity, distribution of poison. Oreg.

The townsend mole. Life history, nature, and extent of damage to crops, suitable bait for poisoning, poisoning in field and in captivity, distribution of poison. Oreg.

Effect of rodents upon grazing ranges, with special reference to the jack rabbit and kangaroo rat. Ariz.

Rodent pests. Utah.

Campaign against injurious field rodents. Minn.

Rodent investigations. A study of the distribution, biology, injury, and means of control of the more important rodent pests of Nebraska, including house rats and mice, pocket gophers, prairie dogs, ground squirrels, and kangaroo rats. Nebr.

Life histories of and control measures for injurious mammals. Kans.

Investigation and control of injurious insects, mammals, and birds.--
Mainly on wireworms, grasshoppers, and white grubs. Nebr.

Slugs.

The garden slug. Oreg.

Miscellaneous.

To make a survey of and collect biological and economic data upon native and introduced plants and animals of the State, their distribution, habits, and agricultural importance. N.Dak.

The zoological geography of Washington. Wash.

ECONOMIC ENTOMOLOGY.

Alfalfa insects. (See also Field crop and specific insects).

Investigations on a snout beetle of alfalfa. Mich.

The alfalfa weevil. Utah.

A study of the alfalfa weevil with the purpose of developing more effective methods for its control. Idaho.

Alfalfa seed insects. Utah.

Insects injurious to alfalfa. Study of various hay worms. Kans.

Ants.

Ants of Colorado in their relation to plant lice. Colo.

Aphids. (See also insects of specific plants).

Investigations on plant lice. Colo.

Investigations on plant lice ravages. Mich.

Ecological and life history studies of Aphididae, with special reference to the alternate food plants of migratory species. Maine.

Biochemical, morphological, and systematic study of aphids. Tex.

Control of green aphid in bearing orchards. N.Y. State.

Life history of Aphis prunifoliae as related to season. Kans.

Laundry soap in water as remedy for aphids, to determine strengths at which this is fatal to aphids without injury to plants, as a simple remedy for use in gardens and other small areas where few plants are involved. N.C.

Ants of Colorado in their relation to plant lice. Colo.

Apple insects. (See also specific insects).

An investigation of aphids injurious to apples: Field spray tests; the biology and habits of aphids as influenced by atmospheric conditions and their effect on the prevalence and activities. A study of host relationship. Oreg.

Woolly apple aphid control. W.Va.

Apple woolly aphid. Ark.

The rosy aphid in relation to abnormal apple structures. N.Y. State.

Control of the apple maggot. N.H.

Apple insects. (Cont.)

Experiments in the control of the apple and cherry maggots by dusting.
N.Y. Cornell.

The lesser apple worm. Ark.

Control of apple and peach tree borers. W.Va.

Bionomics and control of the apple leaf skeletonizer (Canarsia hammondi)
and the bearing of the data obtained on other related species. Md.

An investigation of the life history, habits and control of the bud moth
(Tmetocera ocellana Schiff). Penn.

Study of the hatching and development of the apple red bug and apple leaf
hopper. Conn. State.

The apple leaf hopper in relation to tip burn of potatoes. N.Y. State.

The apple leaf roller. Utah.

Leaf rollers and fruit worms of apple and pear. Study of species and
tests of different sprays and time of spraying for control. Oreg.

Some late summer caterpillars of the apple. N.Y. Cornell.

Studies on fruit insects in the Hudson River Valley: The apple red bugs,
the pear thrips, the pear Psylla and the plum curculio. N.Y. State.

Investigations of insects affecting truck crops, including the striped
cucumber beetle and the apple flea weevil. Ohio.

Dusting v. spraying, to determine the efficiency of dust methods of control
of insects and fungus diseases of the apple. Ind.

Comparison of dusting and spraying for the control of insects and diseases
on the apple. W.Va.

On the comparative value of dusting with lime sulphur (with and without the
use of nicotin) and spraying with Bordeaux mixture and lead arsenate for
the control of insects and fungi which injure the apple crop. Conn.
State.

Army worms.

Army worms- Cirphis unipuncta and Laphygma frugiperda. Life history,
habits, natural enemies, food plants, and control measures. N.C.

Bean insects. (See also specific and Truck crop insects)

The Mexican bean beetle (Epilachna corrupta). Ala.

Insect and other pests of beans. N.Y. Cornell.

Bees.

Beekeeping. Ark.

Honey bees. Utah.

Honey bee paralysis, to ascertain the life history, food plants, and methods of control. Okla.

A study of the bacteria which is found to be the cause of honey bee paralysis. The physiological characters of the bacillus. Okla.

Foul brood eradication and control. Tex.

Spread and control of American foul brood. Wis.

Bee disease inspection in the University Farm beekeeping locality. Minn.

Bacterial flora of the intestinal tract of the honey bee. Iowa.

The relation of tongue length and body size to the production of honey. Iowa.

Time and labor factors involved in gathering, ripening, and storing honey by honey bees. Iowa.

Winter protection of bees. Md.

A study of methods of wintering bees. S.C.

Methods of winter bees. Kans.

Study of proper conditions for bee cellars. Wis.

Summer and winter scale records of colonies of bees. Minn.

Meteorological influence on honey production. Iowa.

The combless packages of bees. Iowa.

Experimental apiaries. Studies of regional bee control. Tex.

Bionomical and systematic study of the superfamily Apina. Tex.

Notes on the relationship between honey flow and queen breeding, inherited characters of queens and methods of producing queen cells. Tex.

Notes on temperature, feeding, ventilation, growing honey plants and light. Tex.

Queen bee raising. Minn.

Artificial fertilization of queen bees. Okla.

Bees. (Cont.)

Total reproduction and comparative reproduction of Carnolian and Italian queen bees. Okla.

A study of pollen substitutes for bees. Minn.

Notes on honey plants, honey flows, size of hives and honey manipulation. (Dilley) Tex.

Economic and systematic study of those plants valuable in bee culture. Tex.

Honey plant investigations. Iowa.

Maintenance of bees in greenhouses. Md.

To effect greater production of bees wax. To determine amount of increase in wax production by practicing certain manipulation of comb, supers and brood chambers, during certain seasons of the year, using checks for comparison. P.R.

To effect greater production of honey per colony. To determine the amount of increase in honey production by building up colonies previous to honey flows by judicious manipulation of brood. P.R.

To encourage the bee industry by demonstrating methods and appliances for handling bees; rearing and distributing queen bees; investigate methods of increase and to keep record of honey production. Guam.

To develop an experiment station apiary to ascertain the best type of bees for Oklahoma the value of bees in the fertilization of alfalfa. Okla.

To investigate the relative susceptibility of the honey bee to compounds of arsenic, with special reference to the excessive mortality of bees following orchard spraying. Wash.

Bee and honey survey of Minnesota. Minn.

Beetles. (See also Weevils and specific crops.)

Coleoptera- ecological and life history studies of Maine species of economic importance, with a view to remedial measures where injurious species are concerned. Maine.

Biology of the genus *Diabrotica* (corn root worm and melon beetle) Study of the economics and methods of control of the species of this genus. N.C.

Annotated list of the Halticini of College Park and vicinity. To identify and list the flea beetles and study their food plants. Md.

A contribution to the knowledge of Staphylinidae. N.Y. Cornell.

White grub investigations. Iowa.

Cabbage insects. (See also Truck crop and specific insects)

Experiments to determine the shrinkage in yields of cabbage as a result of attacks by the cabbage aphid and cost of spraying to secure efficient control. N.Y. State.

Susceptibility of the cabbage maggot to corrosive sublimate. N.Y. State.

Investigation on the control of cabbage root maggots. Mass.

Control of cabbage worms. Mass.

Cabbage and collard dusting. To test and prove efficiency of dusting with arsenates to control cabbage worms. N.C.

Cane insects. (See also Field crop and specific insects)

To determine insect pests of sugar cane, cotton, corn and truck crops, together with a miscellaneous collection of insects from the Island. Virgin Islands.

To determine if insects transmit mottling disease in sugar cane, and if so, what insects. P.R.

Control of white grubs in cane cultivation. To control ravages of white soil grubs in sugar cane cultivation. Virgin Islands.

Cherry insects.

Cherry fruit maggot. Oreg.

Experiments in the control of the cherry and apple maggots by dusting. N.Y. Cornell.

Chinch bugs.

Chinch bug investigations. Missouri.

Cicada.

Distribution of periodical cicada. Ohio.

Citrus insects. (See also specific insects)

The larger plant bugs on citrus and truck crops. Fla.

Parasites of the white fly in relation to reasons for immunity or non-immunity to the insect, physiological effect of the insect and its fungi on the citrus tree and effect of various insecticidal remedies on the tree. Fla.

Clover insects. (See also Field crop and specific insects)

A study of clover aphid and methods for its control. Idaho.

Clover insects. (Cont.)

Insects affecting the seed of the clover plant. N.Y. Cornell.

Three little known pests of clover. N.Y. Cornell.

Codling moth.

Codling moth studies. Colo., Wash.

Study of the life history of the codling moth. Idaho, Ohio.

Investigations of the life history of the codling moth in New Mexico.
N.Mex.

A study of the life cycle of the codling moth and the best time and method of applying insecticides for controlling it. To ascertain if it is possible to improve the present methods of controlling the codling moth. Missouri.

The codling moth. Ecology and control. Improved spray practices, new combination sprays and better technique. Oreg.

Codling moth: Time of spraying as compared with times indicated by isophanes. Mich.

Study of the number of broods of the codling moth to determine the presence and importance of the second brood and whether it is necessary to spray for it. Mass.

Testing spray materials for the control of the codling moth. Idaho.

Investigations of codling moth, particularly with reference to control measures. Wis.

The control of the codling moth. Ark.

To determine the number of broods of codling moth in the high altitude.
N.Mex.

Coffee insects.

Study of coffee leaf minor. To find practical control measures, and to judge value of parasites in the coffee. P.R.

Investigations of minor coffee pests. To determine importance of various insects known to occur on coffee. P.R.

To determine importance of insects found on coffee shade trees and to find practical remedies for injurious ones. P.R.

Corn insects. (See also Field crop and specific insects).

The corn plant louse. Okla.

Corn insects. (Cont.)

Bionomics and control of the corn root aphid Aphis maidiradicis. Md.

Investigations of the European corn borer. Mass.

Corn stalk borer (Diatraea saccharalis). Study of occurrence, distribution, destructiveness, life history, habits, natural enemies, and control measures. N.C.

A study of the life history, distribution and means control of the new corn borer. Iowa.

Seasonal history of the corn ear worm. Iowa.

Studies of oviposition and corn varietal resistance. Kans.

The life history and habits of the corn ear worm. Ky.

An investigation to determine the life history, development and habits of the corn ear worm and practical methods of controlling its ravages. To find some means of preventing this pest from injuring field and sweet corn. It feeds on a wide variety of plants but its main injury is on corn. The old method of fall plowing is not entirely effective and the attempt is made to find some treatment of corn ears which will keep them out. Missouri.

Determination of the effect of time of planting and varieties on the control of the corn ear worm. N.C.

Black corn weevil (Calandra cryzae). To determine whether corn is more injured when shocked or when left on stalk in row, increase or decrease of injury through winter, other field factors bearing on the injury. N.C.

Investigation of the rice weevil attacking corn. Ala.

To determine insect pests of corn, cotton, sugar cane and truck crops, together with a miscellaneous collection of insects from the Island. Virgin Islands.

Cotton insects. (See also Field crop and specific insects)

Biology of the Thurberia boll worm. Ariz.

Cotton boll weevil: To determine spread year by year, habits, life history and natural enemies under North Carolina conditions, control measures. N.C.

A study of the influence of different factors on the hibernation of the boll weevil. S.C.

Boll weevil control. Miss.

Dusting cotton with calcium arsenate against cotton boll weevil. Ala.

Cotton insects. (Cont.)

Experiments with dusting with calcium arsenate as a means of boll weevil control. S.C.

Control of the boll weevil by dusting with calcium arsenate. Tex.

Spraying for boll weevil. Ga.

Effect of burning sulphur in the cotton fields for the control of the boll weevil. Tex.

Insect investigations, to determine insect pests of cotton, sugar cane, corn, and truck crops, together with a miscellaneous collection of insects from the Island. Virgin Islands.

Cowpea insects. (See also Field crop and specific insects)

The cowpea aphid. Okla.

Cranberry insects. (See also Fruit and specific insects).

Study of injurious and beneficial insects affecting the cranberry. (Cranberry Station) Mass.

Cranberry insects. Wash.

Crickets.

Life history studies of the common field cricket (Gryllus abbreviatus). S.Dak.

Life histories, habits and distribution of species of the genus Cecanthus found within the State; methods of control; bark diseases associated with tree crickets; parasites and predaceous enemies. Oreg.

Cucumber insects.

Investigations of insects affecting truck crops, including the striped cucumber beetle and the apple flea weevil. Ohio.

Cutworms.

Cutworms. Minn.

Life history studies of cutworms. Mont.

The life history of several common cutworms. Nebr.

Study of species occurring, life histories, habits, natural enemies, control measures. N.C.

Cutworms: Life history and methods of control. Mont.

False chinch bug.

The false chinch bug. The annual number of broods, time of hibernation, emergence and best methods of control. Okla.

Field crop insects.

Insects injurious to roots of staple crops. Studies of May beetles, Lechnosterna scarbaediae, wire worms and false wire worms. Kans.

Field crop insects of southern Kansas. Life histories of kafir ant, seed corn maggot and certain sorghum infesting insects. Kans.

Flies. (See also Parasites, external).

Ecology and life history studies of Maine species of diptera with special reference to economic species. Maine.

Morphology of the ovipositor in the Anthomyiidae. N.Y. Cornell.

Bombyliidae. Utah.

The Drosophila flies. Minn.

Biology of Pollenia rudis. Md.

Life habits of Syrphus flies. Colo.

Investigations on root maggots. Mich.

Control of root maggots. N.H.

Forest insects.

The life history of a new species of sawfly (Itycorsia lappii Rohmer) on Austrian pine. Conn. State.

Insect pests of western yellow pine. Control of western pine bark beetle. Oreg.

Life history study of the locust borer. Ky.

The boxwood leaf miner. Md.

Fruit insects.

Investigations on the fruit tree leaf roller. Mich.

Small fruit insect investigations, to adapt present knowledge and to discover better methods of effecting the control of insect species as they become sufficiently prominent to demand attention. N.J.

Orchard insect investigations, to adapt present knowledge and to discover better methods of effecting the control of insect species as they become sufficiently prominent to merit attention. N.J.

Fruit insects. (Cont.)

Investigations and demonstrations in the control of insects attacking deciduous fruit trees in California. Calif.

Gooseberry insects.

Cerambyoid borer in gooseberries. Oreg.

Grape insects. (See also Fruit and specific insects)

Life history and relationships of the grape leaf hoppers. Ky.

Control of the grape-berry worm. Ohio.

Life history studies on various grape insects and experiments to determine methods of control. N.Y. State.

Grass insects.

Life history of the spittle insects which attack grasses. Conn. State.

Grasshoppers.

Grasshoppers. Mont., Utah.

The egg laying habits of injurious grasshoppers. Iowa.

Grasshopper control. Colo.

Orthoptera- ecological and life history studies of Maine species of economic importance, with a view to remedial measures, where injurious species are concerned. Maine.

Greenhouse insects.

The life history and control of the greenhouse mealy bug. Md.

The life history and control of the red spider: To study the life history under greenhouse conditions and to develop satisfactory methods of control. Md.

To adapt present knowledge and to discover better means of controlling the species of insects injurious to greenhouse production, as their prominence and lack of knowledge of how to control them seems to demand attention. N.J.

Hemiptera. (See also Aphids, scale insects, leaf hoppers, and insects of specific crops.)

Hemiptera- ecological and life history studies of Maine species of economic importance, with a view to remedial measures. Maine.

Biological and ecological studies of certain North Carolina Homoptera. Studies of the life history, including the various stages, seasonal

Hemiptera. (Cont.)

history, habits, and natural enemies of the harvest fly (Tibicen pruinoso), grass spittle bug (Tomaspis bicincta), yellow headed leaf hopper (Draeculacephala noticulata), alfalfa tree hoppers (Stictocephala spp.), and weed tree hopper (Campylenchia latipes). Artificial control methods. N.C.

Studies of the stink bug family. Ohio.

Hessian fly.

Hessian fly investigations: Life history, control measures, and wheat varietal resistance. Kans.

The fall history of the Hessian fly- limits of the brood or broods if more than one. Ky.

To determine accurately the life cycle of the Hessian fly in Missouri, and the most effective methods of controlling it. Missouri.

Household insects. (See also Flies)

Household insects: Species occurring, habits, life history, damage, control measures. N.C.

Investigations of household insects, especially roaches. Mich.

The household cockroach, Glatella germanica. Minn.

The fish moth. Okla.

Control of household insects. Ohio.

Hymenoptera.

Ecology and life history studies of Maine species of hymenoptera of economic importance. Maine.

Preparation of a host list of parasitic hymenoptera. N.Y. Cornell.

Insecticides and fumigants. (See also Horticulture, Spraying, dusting and fumigating)

Orchard spraying: Insecticides. Minn.

Tests of efficiency of newer insecticides. Ohio.

Comparison of dry and liquid insecticides in controlling fruit insects. Kans.

Investigation of more recent insecticides and their value under Wisconsin conditions. Wis.

Insecticides and fumigants. (Cont.)

Tests of various insecticides to find the value of materials sent in for trial. Why insecticides burn foliage. Mass.

Value of arsenate of magnesium as an insecticidal spray for apples. Del.

Insecticidal properties of lime hydrate, magnesium hydrate, slip and china clays. N.Y. State.

Study of the chemistry of arsenical insecticides. Mass.

The chemical, physical, and insecticidal properties of commercial pine oils and creosotes. Md.

Investigations of methods and effects of fumigation. Ala.

A study of the fumigation with hydrocyanic acid gas of deciduous fruit trees to control certain insect pests. N.Y. Cornell.

Control of sucking insects by contact insecticides in powdered form. N.Y. State.

Toxicity of insecticides. Calif.

Specific toxicity of various chemicals to insects and their hosts. Minn.

Study of the comparative toxic values of little-known insecticides and a comparative study of the powers of resistance of insects to poisons. Oreg.

Control of insects by means of impregnation of the sap of plants with poisonous substances. W.Va.

Progressive immunity of insects to insecticides. Wash.

Insect control by egg treatment. Colo.

The effect of insecticides and fungicides on plants. N.H.

Comparative insecticide tests, to study the lethal effect of new insecticides on plant tissues. Md.

Physiological reaction of plants to light intensity and moisture in relation to burning of foliage by sprays and fumigants. Mass.

Leaf hoppers.

The apple leaf hopper (Empoasca mali LeB.) life cycle bionomics, and control on potato foliage. Penn.

Biology of the Homoptera (leaf hoppers). Study of the ecology, distribution, systematics and economics of the members of this group. N.C.

Leaf hoppers. (Cont.)

Collection and classification of the leaf hoppers occurring in the State, with notes of their hosts. Conn. State.

Control of leaf hoppers in grass lands. Ohio.

Leaf miners. (See also Insects of specific plants)

Life history studies of three species of dipterous leaf miners. Md.

Lepidoptera. (See also specific crops).

Lepidoptera: Ecological and life history studies of Maine species of economic importance with systematic work where necessary for definiteness. Maine.

Repugnatorial organs in Notodontid caterpillars. N.Y. Cornell.

Melon insects. (See also Truck crop and specific insects).

Injurious insect pests of the melon and related crops. To determine what pests must be dealt with by growers of these crops and to develop a practical and effective means for preventing and controlling them. Missouri.

Midges.

The study of the biology and control of the rose midge. Md.

Mites. (See also Insects of specific plants).

Life history of the bulb mite and measures of control. Conn. State.

Eriophyes mites. Study of four species found on fruits and nuts. Oreg.

Blister mite control. Mont.

The biology and economic relation to greenhouse crops of certain mites. Md.

Mosquitoes.

An investigation of the malarial mosquito plague in Missouri. Missouri.

Mosquitoes and their control. Species occurring in State, distribution, abundance, habits, and control measures. N.C.

To discover the principles which underlie mosquito breeding, mosquito flight in attraction to man, and to free the areas in New Jersey which are now seriously troubled with mosquitoes from the incubus of this pest. N.J.

Natural control. (See also Phenological insect investigations).

Economic importance of digger wasps in relation to agriculture. Mass.

Natural control. (Cont.)

Introduction of Chinese mantid. Utah.

A study of Tetrastichus asparagi, an important parasite of the asparagus beetle Cricceris asparagi. N.Y. Cornell.

An investigation of the possibilities of artificial propagation and distribution of predaceous and parasitic insects of fruit tree leaf rollers and apple aphids. Oreg.

Rearing of local injurious insects to determine the parasitic forms that are factors in their natural control. N.Y. Cornell.

Determination of limits of pests in Massachusetts to determine what part of the State, if any, need not pay attention to these pests. Mass.

Neuroptera.

Studies upon neuropteroid insects. N.Y. Cornell.

Nursery insects.

An investigation to determine what insects are injurious to nursery stock in the State, their life histories, distribution, injury and methods of control. Missouri.

To ascertain a method of control of the woolly aphis, especially applicable to trees in the nursery. Md.

Onion insects. (See also Truck crop and specific insects.)

Control of the onion maggot. Ohio.

To study the control of the onion maggot. Mass.

An investigation of the life history, habits, and control of the onion maggot (Phorbia ceparum Meig). Penn.

Parasites, external. (See also Flies, mosquitoes, and ticks).

Biting flies of cattle. Nev.

A study of the life history of the horse louse. Conn. Storrs.

Insects and parasites affecting live stock, including the screw worm and wool maggot, and the goat louse. Tex.

Study of the hog louse. Tenn.

The lice and mites of poultry and their control. To determine the period of infestation; the temperature at which lice eggs hatch; the determination of the more common species of lice found in Indiana, their habitat and effect on the host, determination of the effectiveness of various control measures. Ind.

Parasites, external. (Cont.)

Life history studies of the stable fly (Stomoxys calcitrans). S.Dak.

Repelling stable flies. Md.

Value of fly repellant (pine-tar creosote). Md.

Pea insects.

Investigations of pea moth. Wis.

Peach insects. (See also Fruit and specific insects)

Study of the peach borer. Tenn.

Control of peach and apple tree borers. W.Va.

Control of peach tree borers. Ohio.

The peach and prune root borer. Life history studies and tests of washes, sprays, paints, and protectors. Oreg.

The toxic reactions of the peach tree borer as affecting control. To ascertain the color reactions of adult peach tree borers. Md.

Peach spraying for control of curculio and associated insects and diseases. N.C.

A study of the habits and control methods of the brown rot and curculio of peaches in Georgia. Ga.

Study of oriental peach moth (Laspeyresia molesta) in Maryland. Md.

The hickory capsid as a peach deforming insect. N.Y. State.

Peanut insects. (See also Field crop and specific insects).

Thrips on peanuts. Fla.

Study of the life history, habits, and control of the principal insects of the peanut. Tex.

Pear insects. (See also Fruit and specific insects).

Leaf rollers and fruit worms of apple and pear. Study of species and tests of different sprays and time of spraying for control. Oreg.

Pear thrips. Control and effects of climate. Oreg.

Studies on fruit insects in the Hudson River Valley: The apple red bugs, the pear thrips, the pear Psylla and the plum curculio. N.Y. State.

The life history and methods of control of the pear sinuate borer. N.Y. State.

Pecan insects. (See also specific insects)

Study of economic importance, life history, habits, biology and control measures of insects affecting the pecan. N.C.

A systematic and biological study of insects affecting the pecan. Miss.

Phenological insect investigations.

Climate and insect investigations. To discover the general principles which underlie the response of injurious insects to the climatic complex and to develop important clues to new and better methods of insect control. N.J.

Relation of temperature to insect life. W.Va.

The relation of temperature and moisture to insect activity. S.C.

Plum insects. (See also Fruit and specific insects)

Life history studies of spring saw-fly of plum (Neurotoma inconspicua). S.Dak.

Studies on fruit insects in the Hudson River Valley: The apple red bugs, the pear thrips, the pear *Tsylla* and the plum curculio. N.Y. State.

Control of plum curculio. Wis.

Studies of methods of controlling European plum mite. Conn. State.

Potato insects. (See also Field crop and specific insects).

Spraying tests to control the potato aphid. Conn. State.

A comparison of nicotin sulphate and scalecide. A study of the green and pink potato and tomato aphids. Ohio.

The life history and methods of control of the potato leaf hopper. Iowa.

Potato beetle control: Different methods of poisoning and time of applying. Mont.

Potato spraying and flea-beetle control. Determination of spraying program for best control of the flea beetle and other potato insects; also other methods of flea-beetle control if needed. N.C.

Dusting v. spraying of potatoes for the control of blights and insect pests. N.Y. State.

Prune insects. (See also Fruit and specific insects).

The peach and prune root borer. Life history studies and tests of washes, sprays, paints, and protectors. Oreg.

Pumpkin insects.

The pumpkin bug. Fla.

Red spider.

The life history and control of the red spider. To study the life history under greenhouse conditions and to develop satisfactory methods of control. Md.

An investigation of the life history, habits, and control of the imported red spider. Penn.

The control of red spider on deciduous trees and small fruits. Calif.

San Jose scale.

San Jose scale; life history and control. To study the life history and the control of this insect. N.Mex.

The seasonal development of the San Jose scale and relative susceptibilities of the different life stages to certain insecticides. N.Y. State.

A test of the effect of dusting peach trees with various commercial sulphur preparations for the control of the San Jose scale. Tex.

Scale insects. (See also San Jose scale)

Biology of the genus Chrysomphalus (gloomy scale). A study of the economics and methods of control for the species of this genus in North Carolina. N.C.

Oyster shell scale. Mont.

The more resistant scales and leaf eating caterpillars. Ohio.

Dates of hatching of scale insects, and fixing dates for spraying the same. Mass.

A study of the comparative efficiency of different spray materials in controlling scale insects. S.C.

Scale insects of St. Croix and their control. To determine the number of species of scale insects and host plants of each, found on St. Croix Island. To use spraying experiments to effect a control for the insects. Virgin Islands.

Systematic and biological study of scale insects of Mississippi. Miss.

Part 1, of monograph of coccidae of Michigan completed, being a publication entitled "The Lecania of Michigan". Mich.

Shade tree insects.

Shade tree insect investigations: Study of insects affecting elms and cedars. Kans.

Shade tree insects. (Cont.)

A survey of the shade trees in several cities for the purpose of insect control. Ohio.

Soy bean insects.

Green clover worm (Plathypena scabra) on soy beans. Life history, habits, natural enemies, and control measures. N.C.

Squash insects. (See also Truck crop and specific insects).

Control of the squash bug. Mass.

Control of the squash-vine borer. Mass.

Stored products insects.

Control of insects in stored grain. Ohio.

A survey of the principal warehouses of the State to locate and assist in controlling injury to food products resulting from insect attack. Calif.

Control of insects on dried fruits. Calif.

Control of insect pests of growing crops, stored products and live stock, with special reference to the increase and conservation of food products. Md.

Strawberry insects. (See also Fruit and specific insects).

Control of the strawberry aphid. Md.

Life history investigations of the strawberry root louse (Aphis forbesi Weed). Tenn.

The strawberry weevil. Ark.

Dusting strawberry fields to control the strawberry weevil. Md.

Sugar beet insects. (See also Field crop and specific insects).

The sugar beet louse. Mont.

Sweet potato insects. (See also Field crop and specific insects).

Control of sweet potato scarabee. To try to lessen ravages of the scarabee among sweet potatoes grown on the Island. Virgin Islands.

The life history, habits, and control of the sweet potato weevil Cylas formicarius Fabr. Tex.

Termites.

Termite investigations: Studies of mating and the length of egg stage.
Kans.

The white ant. Okla.

Thrips.

Camphor thrips. Fla.

A study of the life history of euthrips and Cryptothrips floridensis.
Fla.

Ticks.

Tick investigation. Spotted fever tick. Mont.

Investigation of cattle tick, to determine life history of cattle tick,
including starvation period. P.R.

Tobacco insects. (See also Field crop and specific insects).

Tobacco flea beetle. To secure a satisfactory method of control for this
insect under farm conditions. N.C.

A study of the life history and limits of broods of the tobacco worm
(Phegthontius sexta). Ky.

Tomato insects. (See also Truck crop and specific insects).

Plant lice: A comparison of nicotin sulphate and scalecide. A study of
the green and pink potato and tomato aphids. Ohio.

Truck crop and garden insects.

Truck crop insect investigations, collecting and rearing of larvae of
various insects attacking truck crops. Virgin Islands.

The larger plant bugs on citrus and truck crops. Fla.

Vegetable insect investigations, to adapt present knowledge and to dis-
cover better methods of effecting the control of insect species as they
become sufficiently prominent to merit attention. N.J.

Insect control on market garden crops. (Market Garden Field Station)
Mass.

Investigation of insects affecting truck crops, including the striped
cucumber beetle and the apple flea weevil. Ohio.

An investigation of the life history, habits, and methods of control of the
plant lice (Aphididae) affecting truck crops. Penn.

Truck crop and garden insects. (Cont.)

Control of the corn ear worm on truck crops. W.Va.

To determine insect pests of truck crops, corn, cotton, and sugar cane, together with a miscellaneous collection of insects from the Island. Virgin Islands.

Important insects affecting garden crops. Harlequin cabbage bug, cabbage aphid, cabbage butterflies, cabbage loopers, flea beetles, onion thrips, cutworms, squash bug, cucumber beetles and possible new pests; to learn of the natural enemies and other factors influencing the prevalence of the pests; to determine possible adequate and practical means of control. N.Mex.

Turnip insects.

The turnip webworm (Hellula undalis). Ala.

Velvet bean insects. (See also Field crop and specific insects)

Life history studies of the velvet bean caterpillar. Fla.

Weevils. (See also insects of specific crops).

Biology of the genus Bruchus (bean and pea weevil). Life history studies and methods of control. N.C.

Study of the life history, habits, and control of the cowpea weevil (Bruchus quadrimaculatus). Tex.

Wheat insects. (See also Field crop and specific insects).

The life history of wheat-infesting sawflies. Nebr.

Life history studies of the wheat stem maggot (Meromyza americana). S.Dak.

An investigation of the "Hessian-fly-resistant" qualities of different varieties of wheat. Missouri.

Wheat straw worm. Utah.

White fly.

Parasites of the white fly in relation to reasons for immunity or non-immunity to the insect, physiological effect of the insect and its fungi on the citrus tree and effect of various insecticidal remedies on the tree. Fla.

A study of the life history and limits of broods of the white fly (Asterochiton vaporariorum) of greenhouses. Ky.

Wire worms.

The wire worm. Wash.

Miscellaneous.

General insect investigations. Colo.

Miscellaneous insects. Utah.

Insectary work. Minn.

Insect collection. Minn.

The development of a collection of economic insects. Ariz.

Studies of insect outbreaks in various localities. Mass.

The relation of insects to the transmission of fire blight. Ohio.

Insect vectors of plant diseases. N.Y. Cornell.

The nutritional requirements of certain insects (Tribolium confusum Duval). Minn.

Parthenogenesis in certain dipterous insects. N.Y. Cornell.

The endoparasites of insects. Wash.

Artificial biological control of certain injurious insects. N.Y. Cornell.

Investigation as to how sap sucking insects injure plants. Missouri.

Insects injurious to market milk. To determine the importance of the various species concerned, to adapt already known measures and to discover better ones for any species that proves to be seriously injurious. N.J.

Investigation and control of injurious insects, mammals, and birds. Mainly on wireworms, grasshoppers, and white grubs. Nebr.

Tree tanglefoot investigations. Minn.

The relative susceptibility of various cereals to insect attack. Minn.

Measures for protecting wheat flour substitutes from insects. Minn.

Insect survey of Montana. Mont.

Insect life of North Carolina. To secure as full information as possible concerning the insect life of the State, the species occurring, distribution, economic relations, biology, and ecology. Preparation of lists, collections, maps, etc. N.C.

FOODS AND HUMAN NUTRITION.

Food preservation.

Proper method of curing meat and to determine amount of shrinkage from different methods of feeding. N.C.

Slaughter and curing of meats. To determine the most profitable way of disposing of hogs. Also the shrinkage in curing. Md.

Preservation of eggs for home use. Tex.

Preserving eggs for winter use. Ark.

Preservation of market eggs. N.Y. Cornell.

The keeping qualities of infertile eggs, when held by the producer. Tex.

Investigation concerning methods of preservation of Hawaiian grown food products. Development of practical home and factory methods of canning, preserving, drying and pickling of various Hawaiian grown vegetables, foods and other food crops, especially bananas, avocados, taro edible canna, sweet potatoes, papaya, and pineapples. Hawaii.

The preservation of apple cider and other fruit juices. N.Y. Cornell.

Fermentations in production of sauerkraut. Commercial and home manufacture of sauerkraut; microorganisms normal and essential in the production of sauerkraut. Iowa.

Dehydration of fruits and vegetables. Oreg.

A study of methods of fruit drying, designed to prevent darkening of fruit during process without use of sulphurous acid. Calif.

Economical drying of wine and table grapes. Calif.

Effect of sulphuring in fruit tissues and its possible relation to the palatability of the dried product. Calif.

Canning of Oregon grown apples. Oreg.

Clarification and sterilization of canned cider. Oreg.

Canning dried Italian prunes. Oreg.

Use of containers for packing dried prunes. Oreg.

Grape sirup as a substitute for sugar in canning. (At Berkeley, Davis, and various canneries). Calif.

Canning investigations in the light of normal and resistant organisms in continuous, fractional, and pressure methods of sterilization. Mass.

Microorganisms of the canning industry. To determine the organisms more frequently associated with the deterioration of canned products; the thermal death point of these organisms; the relationship existing between the hydrogen-ion concentration and the thermal death point in order to determine the most favorable composition of all materials for canning. Iowa.

Food preservation. (Cont.)

Heat resisting bacteria of fresh and canned vegetables and their relation to spoilage. Colo.

A study of the thermal death point of Bacillus botulinus, especially in relation to the sterilization of canned vegetables. Calif.

The effect of blanching in the canning of some typical crops of vegetables. Missouri.

Milling and baking.

Milling and baking tests with different varieties of wheat. Ohio.

Chemical and milling tests on wheat varieties and wheat produced by various methods. Kans.

Investigation on the milling quality of wheat. N. Dak.

Relation between physical characters, chemical composition and milling and breadmaking quality in wheat. Maine.

Baking qualities of flour. Wash.

Milling and baking technology. Ohio.

The strength of wheat flour - colloidal and other factors which may be involved in flour strength. Minn.

A study of the total and water soluble calcium and magnesium content of flours from strong to weak wheats. N. Dak.

The biochemical changes in frosted wheat and their effects on the breadmaking quality and market value. Mont.

Grain storage investigations. Minn.

Grain removal methods in vogue by flour mills. Minn.

Survey of dockage in northwestern grain. Minn.

Storage studies.

Storage experiments. Mich.

Freezing experiments in connection with storage studies. Mich.

Storage tests with vegetables, to determine best storage varieties and proper conditions of storage for various crops. N. Dak.

Storage of cabbage- methods of winter storage. Mont.

Effect of various storage conditions on the quality and seed value of root crops, with special reference to potatoes. Md.

Fruit storage. Wash.

Storage studies. (Cont.)

The cold storage of certain semi-tropical fruits. Calif.

Effects of cold storage on dried fruits. Calif.

Storage of fruits at low temperatures for preserving, canning, and soda fountain use. Calif.

Cold storage for Iowa apples. Iowa.

The keeping qualities of apples in cold storage as affected by the health and vigor of trees. Calif.

Miscellaneous:

Fruit juices, Ohio.

Vinegar studies. Colo.

Meat work, in connection with cattle, sheep, swine, and poultry studies.

Slaughter test. Separation of edible and nonedible, determination of the fat, lean, and water content of the edible parts. Ohio.

Rabbit feeding for meat production. Mont.

Correlation of market egg qualities with cooking values. N.Y. Cornell.

A study of the effects of cereal diet on the capacity of the blood to combine with carbon dioxide. Ohio.

Human food. Tex.

Nutrition of infants. Utah.

The investigation of the food value for infants and invalids of various milks. Md.

Studies regarding the nutritive value of milk, its suitability for food for children and animals, conditions which effect its nutritive value, tolerance and related questions. Vt.

The influence of vitamin preparations upon the growth and development of children. Minn.

FEEDING STUFFS AND ANIMAL NUTRITION.

Feeding stuffs, composition, and nutritive value.

Investigation of the nutritive value of feeds. Tex.

The nutritive value of the proteins of feeding stuffs. Ill.

Feeding trials of new materials in comparison with standard feeding stuffs to measure in an approximate degree their relative nutritive values in feeding live stock. Mass.

The chemical analysis of forage crops and feeding stuffs. Wyo.

To determine the value of the New Mexico Pinto bean as a stock food. N. Mex.

Feeding stuffs, composition, and nutritive value. (Cont.)

Effect of cottonseed meal on cows and heifers in reproduction. To determine the effects of various quantities of cottonseed meal on the reproductive organs of beef and dairy females when fed and handled under various conditions. N.C.

Feeding value of clover cut at various stages of growth. Mont.

Feeding value of sunflowers according to maturity of the plant. Mont.

Determination of the composition and digestibility of Sudan grass hay, darso, broom corn seed and sunflower silage. Okla.

A determination of the biologic value of the proteins of peanuts, soy beans, and coconut (copra). Okla.

Chemical content of forage crops, particularly hydrocyanic acid in Sudan grass. Kans.

The soap weed (Yucca elata) and its feeding and nutritive value for range cows. N.Mex.

Chamiso, or shadscale (Atriplex canescens) for cattle maintenance. N.Mex.

A study of rations suitable for horses, including digestion of foods and energy values of foods and rations. Mass.

Digestion experiments with sheep. Materials recently studied: Diamond gluten meal, wheat gluten meal, corn bran, distiller's grains, vinegar grains, garbage, tankage, soy bean hay, sweet clover, Sudan grass, cabbages, carrots, mangels, turnips, and pumpkins. Mass.

Mineral constituents of cattle feed. NY. Cornell.

Animal nutrition.

High and low protein requirements for growing animals. Md.

The effect of feeding high and low protein rations. S. Dak.

Protein requirements for growing cattle. Nebr.

Protein requirements for the growth of cattle. Mass., S. Dak.

Protein requirements for the growth of cattle.--To determine the optimum protein requirement for the growth of cattle without material fattening. N. Dak.

Cooperative experiments on the protein requirements for growing cattle. N. Dak.

The minimum protein requirement for milk production. Penn. Inst. Anim. Nutr.

Minimum protein requirement of dry cows. Penn. Inst. Anim. Nutr.

Determination of the protein and energy requirements for milk production. Va.

Efficiency of various protein mixtures for growth in swine and milk production in dairy cows. Wis.

Cattle experiments: Relation of feed and feeding to growth and milk yield. Main.

Animal nutrition (Cont.)

- Factors influencing the composition of milk, the influence of the plane of nutrition of the cow. Missouri.
- Effects upon milk production of varying amounts of the same feed. Penn. Inst. Anim. Nutr.
- Relative utilization of energy in milk production and in fattening. Penn. Inst. Anim. Nutr.
- Food requirement for growing dairy cattle. Minn. Nebr.
- A chemical study of the nutrition of calves. Ind.
- Metabolism trials with young calves. Iowa.
- Metabolism in dairy cows. Penn.
- Influence of nutrition of heifers during their growing period upon their subsequent functional activities, size, vigor, and general usefulness. Missouri.
- Influence of specific natural foods, especially straws and certain grasses, on reproduction in herbivora. Wis.
- Studies of the factors necessary in the maintenance of mammals. Wis.
- Effect of organic nutrients from single v. mixed plant sources on the growth and reproduction of animals. Wis.
- Effect of different amounts of the same feeds on digestion and utilization in maintenance, growth, and fattening. Ill.
- The influence of submaintenance rations in the wintering and subsequent fattening for market, of farm animals. N.H.
- The acid-base balance in animal nutrition. Iowa.
- Comparison of nutrients from single plant sources and from different plants on development of animals. Wis.
- Study of basal metabolism with cattle and sheep during various stages of development. N.H.
- Attempts to ascertain the use made of food by steers at different ages and in different conditions. Missouri.
- Study of factors influencing the normal rate of growth in domestic animals and the permanency of the effects of arrested development. Missouri.
- Protein storage in protoplasmic tissue. Missouri.
- Chemical studies on animal nutrition and deficiency diseases. Minn.
- Factors that influence the composition of body fat. Kans.
- Mineral and organic acids for swine. Iowa.
- The effect of protein, calcium, and phosphorous fed pregnant swine and sheep upon the size, vigor, bone, coat, and condition of offspring. Iowa.

Animal nutrition (Cont.)

The effect of age on rate, economy, and character of gains, involving individual feeding slaughter tests and a study of the carcass to determine the proportions of water, fat, and protein yield for hogs at 100, 200, 300, 400, and 500 lbs. weight. Ohio.

Metabolism and catabolism in the chicken. Ky.

Nutritive requirements of growing chicks. Nebr.

Deficiencies of feeds fed hens as affecting the vitality of chicks. Kans.

Effect of organic nutrients from various sources on the growth and reproduction of poultry, with special emphasis on a study of "leg weakness". Wis.

The influence of different rations upon the composition of fat in poultry. Iowa.

The role of dairy products in practical nutrition. To determine the effect of feeding albino rats the more common staple human foods, with milk and dairy products, with dairy product substitutes and with no dairy products. Okla.

Anatomical and pathological changes in scorbutic guinea pigs. Minn.

The nutritional demands of the guinea pig. Minn.

Composition, constitution, and properties of proteid bodies, especially those of ripe seeds and their relative efficiency in nutrition. Conn. State.

The constitution, metabolism, and physiological effect of certain phosphorus bodies found in feeding stuffs. NY State.

A biological study of the nutritive value of the velvet bean. Ark.

Digestion experiments on prairie grass hay, to determine its digestibility at three stages of growth by use of steers. N. Dak.

Vitamin studies.

Composition and properties of the proteid bodies and vitamins, especially those of ripe seed, and their relative efficiency in nutrition. Conn. State.

The antiscorbutic properties of beef. Minn.

The influence of vitamin preparations upon the growth and development of children. Minn.

The influence of vitamin-free diets upon the development of reproductive organs in cockerels. Minn.

To determine the relation between quantity of vitamins in the eggs and the rations fed to the hens producing the eggs. Kans.

Relation between vitamins in the food eaten and in the milk produced by a lactating mother. Effects of vitamin-deficient rations on the milk produced by cows. Kans.

The effect of heat upon the antiscorbutic properties of milk. Minn.

The relation of the vitamin content of dairy feeds to the vitamin content of cows' milk. Minn.

Factors influencing vitamin content of milk. Minn.

Study of fat soluble A content of feeds commonly supplementing corn in feeding hogs. Nebr.

The relation of color to the amount of fat-soluble vitamin in foods. Minn.

Metabolism of a hen under vitamin starvation. N.Y. State.

The metabolism of vitamin starvation. N.Y. State.

Is the antiscorbutic vitamin essential for normal growth and development in the albino rat? Minn.

The relative vitamin requirements of various species of animals and the effects of vitamin deficiency. Iowa.

The effects of vitamin deficiency on various species of animals. The production of Xerophthalmia in the rabbit. Iowa.

Sources of vitamins in feed; the relation of pigments to animal nutrition; the stability of vitamins and their relation to growth and reproduction. Wis.

Use of yeasts to further our knowledge of growth-promoting substances, or vitamins. Wis.

Mineral metabolism.

Mineral metabolism and mineral requirements of animals. Wis.

The calcium balance of dairy cows. To study the causes of the negative calcium balance so frequently found in the case of dairy cows and if possible to evolve corrective measures. Iowa.

Retention of ash ingredients by cows in milk. Penn. Inst. Anim. Nutr.

The comparative value of calcium carbonate, floats, precipitated bone flour, and steamed bone flour as mineral supplements of swine. Ohio.

The effect of calcium, protein, and phosphorus fed pregnant swine and sheep upon the size, vigor, bone, coat, and condition of offspring. Iowa.

Mineral nutritional studies with poultry. N.C.

Calcium requirements of chickens. Wis.

Silage and silage feeding experiments.

Silage investigations. Ark.

Silage-making methods. Oreg.

Methods of securing maximum utilization of silage. Kans.

A study of the proteins of different forage crops before and after ensiling. Idaho.

Silage and silage feeding experiments. (Cont.)

Influence of fermentation on the starch content of experimental silage. Iowa.

Acid formation in corn and in sunflower silage untreated and when treated with Bacterium lactis acidii. Oreg.

A comparison of the relative food values per acre of silage made from large silage corn and common field corn. Ohio.

A comparison of various varieties of corn for silage purposes. Idaho.

Comparison of corn stover silage and ordinary corn silage for milk production. Penn.

A comparison of the nutritive values of silage made from early and late maturing varieties. Ohio.

Silage from corn without ears fed to fattening bulls. Oreg.

Investigations in feeding value of stover silage and silage from thickly-planted corn as compared to normal corn silage. Mich.

Corn stover silage v. normal corn silage for dairy cows. Wis.

Comparison of corn silage and corn-soy bean silage for milk production. Penn.

A comparison of corn silage, artichoke silage, sunflower silage, carrots and potatoes as feed for milk production. Wash.

A comparison of corn silage with oat and pea silage for milk production. Penn.

The value of oat and pea silage for wintering pregnant ewes. Wyo.

Sunflower silage. NH.

The production of sunflower silage. Nev.

Factors causing poor quality in sunflower silage in the lower Yellowstone Valley, Mont.

The composition of sunflower and sweet/^{clover} silage during several periods of growth. Idaho.

The digestible coefficients of sunflower silage when fed to cattle and sheep. Idaho.

Sunflower silage v. corn silage. Wis.

Sunflower silage for baby beef. Feeding calves over the winter on different rations, with sunflowers. Mont.

Pasturage and silage production for sheep: The production of sunflower silage. Nev.

Sunflower silage compared with corn silage for wintering sheep. Oreg.

Sunflower silage compared with corn silage for wintering heifers. Oreg.

Value of sunflower silage for dairy cows. Mich.

Silage and silage feeding experiments. (Cont.)

A test of sunflower silage to determine whether or not it is equal or superior to corn silage as a supply of carbohydrates for dairy cows. Ga.

Feeding trial comparing vetch, corn, and sunflower silage for dairy cows. Oreg.

A comparison of corn silage with sunflower silage for milk production. Penn.

Test of silages made from wild sunflowers, kafir stover, cane stover, and corn. Kans.

The composition and properties of silage prepared from the grain sorghum. Okla.

Sugar beet top silage found in Idaho. Idaho.

Use of silage other than corn in the feeding of beef cattle and sheep. Idaho.

ANIMAL HUSBANDRY, GENERALMiscellaneous.

Sex type as related to functional development and performance in Shorthorn cattle. Kans.

The normal growth of dairy and beef cattle as a whole and of certain parts. Maine.

Normal growth and post embryonic differentiation. Maine.

Study of the relation of one lactation to another in the dairy and beef breeds of cattle. Maine.

The determination of the growth curves of dairy and beef cattle. Maine.

Cytological studies of the reproductive cells of cattle and sheep with some similar studies on the mule. Idaho.

Causes of sterility in domestic animals; the morphology and physiology of spermatozoa. Ky.

To determine the effects of various quantities of cottonseed meal on the reproductive organs of beef and dairy females when fed and handled under various conditions. N. C.

Physiological variations in the temperature of cattle. Minn.

Physiology of reproduction in cattle, including experiments on feeding organ extracts, the study of freemartin heifers, etc. Maine.

ANIMAL HUSBANDRY, CATTLE

(See also Dairy farming).

General.

Beef cattle. (North Platte Substation) Nebr.

Animal Husbandry, Cattle, General (Cont.)

Beef cattle investigations. Ark.

Study of maintenance and management problems with beef breeding cows,
(Caldwell Substation) Idaho.

Live stock survey. W. Va.

Breeding

Cattle breeding experiments. Maine.

Cattle breeding for beef, to ascertain if good cattle could be reared on
native pasture. Alaska.

Beef cattle: Building up a grade herd from native stock and pure bred Angus,
Hereford, and Shorthorn Bulls. Miss.

Breeding up the native cattle by using registered Shorthorn bulls. (North
Louisiana Experiment Station, Calhoun) La.

The development of better cattle in the sandy region of southeastern North
Dakota. (McLeod Demonstration Farm) N. Dak.

Placing of pure bred bulls over the State. Md.

Cattle breeding. To encourage the breeding of improved cattle, and to determine
the degree of hardiness possessed by progeny of pure bred Ayrshire cattle
under Guam conditions, and to evolve a strain of cattle for Guam resulting
from different crosses of Ayrshire on native cows for the purpose of attain-
ing maximum hardiness, size, feeding qualities, etc. Guam.

To improve the breed of cattle found in Porto Rico. P.R.

Cattle investigations, to determine whether or not calves sired by a Brahma
bull and out of grade Hereford cows, possess any special advantages over
calves sired by registered Hereford bulls and out of the same grade cows.
Tex.

Cooperative breeding records: Records secured from the leading cattle
breeders. Maine.

Cattle experiments by pedigree studies and analysis of the records to deter-
mine why certain bulls transmit low or high milk yield or butter-fat per-
centage. Maine.

Breeding dual purpose cattle, to test adaptability of milking Shorthorns to
that section of the country.

Age as a factor in animal breeding. Missouri.

Influence of feed, environment, and breeding on native unimproved cows, and
their offspring, as regards development of milk-producing qualities, com-
position of milk digestive capacity and utilization of feed in dairy and
beef production. Iowa.

Physiology of reproduction in cattle, sterility, heat, length of gestation,
etc. Maine.

Cattle breeding. (Cont.)

Sterility in breeding cattle. Oreg.

Effect of cottonseed meal and other nitrogenous feeds on the breeding quality of animals. Okla.

Effect of arsenic (Fowler's solution) upon the reproductive powers of the individual and its offspring. Ill.

Multiple births in cattle. Wis.

Experimental analysis of the heredity factors determining milk and meat production in cattle. Wis.

Yak breeding. To produce a race of cattle that shall be as hardy as the moose. Alaska.

Cost studies, production, finishing, and maintenance. (See Rural economics, Cost of production.)

Feeding experiments, general. (See also Feeding stuffs and animal nutrition.)

Steer feeding investigations. Idaho. Ky.

Steer feeding investigations. (Caldwell Substation) Idaho.

Study of maintenance and management problems with beef breeding cows. (Caldwell Substation) Idaho.

Maintenance of beef breeding cows. Penn.

Feeding breeding heifers. Wyo.

Feeding silage to steers. S. Dak.

Steer feeding, to determine if there would be any advantage in substituting silage for a part of the cottonseed hulls in a ration of cottonseed meal, ground corn or milo, black strap molasses and cottonseed hulls for fattening cattle. Tex.

Steer feeding, using corn silage and corn stover silage or mock silage as roughages, together with concentrates. Va.

Alfalfa hay alone, chopped alfalfa hay, alfalfa hay and grain, alfalfa hay and silage, and meadow pasture for fattening steers. (Union Branch Station) Oreg.

Preparation of corn in fattening steers. Penn.

Value of legume hays and straws for production of beef. Wash.

Velvet beans v. cottonseed meal for fattening steers. Ala.

Steer feeding experiments: A comparison of black strap molasses fed with cottonseed and full feed of corn silage. Miss.

Feeding beef by-products to steers. Colo.

Feeding experiments, general. (Cont.)

Comparison of hay (chiefly timothy) and corn silage for use in the winter rations for breeding cows. Ohio.

The use of by-products of corn and oat culture and a legume in the crop rotation for the maintenance of beef breeding cows. Ill.

Feeding experiments with velvet bean feed with cows and calves. Ky.

Cattle feeding tests, to determine the value for cattle feeding of certain locally adapted feeds and pasture crops. Guam.

Short feeding cattle, to study the economy of carrying grass cattle beyond the grass fat condition; to determine the gain possible with bunk or rack feeding in the open yard with corn fodder and silage, respectively; to learn the feasibility of sheltering such cattle in a straw shed; to study the feeding and feed value of sunflower silage and sweet clover silage; to determine the effect of a light grain supplement to silage rations. N. Dak.

Fattening cattle, Mobr.

Rations for fattening steers. Penn.

Steer feeding, to find the combination of feeds best suited to the fattening of steers under western conditions where alfalfa is plentiful and corn is high in price. Utah.

Fattening steers, to secure data on the feeding of limited grain rations to fattening steers; to study the value of corn and soy bean silage as compared with corn silage and the value of the soy bean in the silage as a substitute for cottonseed meal as a source of protein supply for fattening steers. Ind.

Fattening cattle-grain allowance. Iowa.

Heavy and light grain rations when fed in connection with corn silage and clover hay for fattening steers. Missouri.

A comparison of light, medium, and heavy grain rations for fattening young cattle. Ohio.

Beef cattle: A comparison of corn alone with corn and oilmeals as feeds for young animals. Ohio.

Barley v. corn for fattening steers. Wis.

Fattening native steers for market. Ariz.

Comparative rations for growing and wintering beef heifers, to determine the cost of growing and wintering; the value of kafir silage with protein supplements; and the value of alfalfa hay and cottonseed meal. Okla.

Fleshening range cows. Ariz.

Feeds for growing cattle. (Union Branch Station) Oreg.

Winter cattle feeding experiments. Missouri.

Wintering beef cattle in western North Carolina. To determine the cost of wintering cattle and the residual effects of the various methods of winter-

Feeding experiments, general. (Cont.)

Study of winter feeding of beef steers. Mont.

Feeding beef cattle. To determine the most profitable ration for wintering two-year old steers when they are to be fattened on grass the following summer. W. Va.

Testing home-grown feeds for wintering steers. Wyo.

Winter fattening of beef cattle, to determine the most profitable method of finishing beef cattle on cottonseed meal. N.C.

To determine the relative value of protein supplements where added to a basal ration of corn, corn silage, and alfalfa hay, the quantity of protein supplement to add to this basal ration. Iowa.

Wintering beef cattle. To determine the best rations and the cost of keeping breeding cows. W. Va.

Growing steer calves. To study the effect of wintering beef-bred steer calves on different rations upon their subsequent gain on pasture. W.Va.

Finishing baby beef. To compare sunflower silage, cane silage, darso silage, corn silage, and kafir silage as a roughage in making beef, and sunflower silage and darso silage as roughages for finishing cattle. Okla.

To determine the comparative value of sunflower silage and cane silage in the finishing of baby beef. Okla.

Baby beef growing and fattening. Free choice calf feeding, to study the production costs on the growing and fattening calves intended for baby beef production and the reliability of the appetite of calves as manifested in their choice of feed or feeds suitable for their development and profitable growth. Iowa.

To make a study of the production and finish of baby beeves under West Virginia conditions. W. Va.

Limited rations in development of range bulls. Oreg.

Two methods of raising Hereford heifers. Ariz.

Beef cattle feeding over the State. To observe methods and secure feeding and weight data. Md.

Grazing and range experiments.

Grazing studies. Idaho

Cattle grazing: Kudzu grazing in connection with a regular pasture, the latter given different treatment as to mowing weeds and plowing. La.

Maintenance of range cows on dry farm crops, during periods of range shortage. To show that it is profitable to keep range cows in condition to produce strong healthy calves and supply them with sufficient nourishment to make vigorous, rapid growth; to compare kafir silage with Sudan hay, both feeds being supplemented with cowpea hay. (Tucumcari Field Station). N. Mex.

ANIMAL HUSBANDRY, SHEEP AND GOATS.

General.

To determine the practicability of producing sheep profitably under range conditions in western North Carolina. N.C.

To find out the value of sheep to the farming system of this region. (Sandpoint Substation) Idaho

Relation of sheep to dry farming conditions. Colo.

Work with sheep (Highmoor Farm) Maine

"Sheeping-down" corn. Iowa

Breeds and breeding.

Sheep breeding experiments. N.H., Ky., S. Dak.

Production of a hardy breed of sheep suited to the coast region. Alaska.

Crossbreeding experiment with sheep. Penn.

A study of crossbreeding western range ewes with a pure-bred mutton ram. Penn.

Sheep (Karakul) breeding investigations. Tex.

To determine whether or not the Corriedale breed of sheep is adaptable to Texas conditions. Tex.

Tests with different breeds of sheep. S.C.

Sheep breeding experiments to build up a flock of high class grades from native ewes, using pure bred Shropshire, Southdown and Dorset rams. Miss.

A study of the leading breeds of sheep with reference to factors that influence production and management. Idaho

Comparison of rate, economy and character of gains produced by Dolaine and by cross-bred lambs. Ohio

Establishing a breed of sheep for winter lambing and a study of inheritance of characters. Okla.

Effect of cottonseed meal on reproductive qualities of sheep: To determine the time that heavy quantities of cottonseed meal may be fed without producing reproductive troubles. N.C.

Ewes, feeding and maintenance.

Feeding breeding sheep. W.Va.

Wintering breeding ewes. Okla.

Winter maintenance of breeding ewes. Colo.

Wintering pregnant ewes. Iowa.

Ewes, feeding and maintenance. (Cont,)

To determine if it is profitable to breed broken mouthed ewes for winter lamb production and feed the ewes on waste roughage of irrigated farms, during the fall and winter, with a small grain ration during the winter, and then sell both lambs and ewes in the spring for lamb and mutton. N. Mex.

Maintenance ration for breeding flocks of mutton and wool sheep. Penn.

Methods and cost of maintaining breeding ewes and producing lambs. To determine the possibility of producing sheep profitably under Piedmont North Carolina conditions. N. C.

A comparison of different roughages in winter rations for breeding ewes. Ohio.

The value of legume hays and straws for wintering the breeding flock. Wash.

To determine the comparative value of some Oklahoma feeds for wintering breeding ewes; the cost of wintering breeding ewes, the adaptability of this work for Oklahoma conditions; to compare rations containing silage with those containing no silage. Okla.

A comparison of large, medium, and small amounts of protein in the ration for breeding ewes, with respect to rate and economy of gain by ewes and lambs, and amount of grease and scoured wool produced. Ohio.

Various amounts of grain in connection with green forage crops for ewes and lambs, including a comparison of dry lot feeding and feeding on forage. Ohio.

Lambs, feeding and fattening.

Lamb feeding investigations. (Caldwell Substation) Idaho.

Fattening lambs, comparison of different feeds. (Union Branch Station) Oreg.

Fattening lambs. Comparison of feeding in the open and feeding under shelter (Union Branch Station) Oreg.

Wintering range lambs in dry lots. Iowa.

Native feeds for fattening lambs. Wyo.

Rations for fattening lambs. Nebr.

Growing rations for ewe lambs. Wyo.

Feeding western lambs. Tests of various rations for finishing. Kans.

To determine the cost in feed and pasture of raising spring lambs and the relative values of the different types of management. Oreg.

A comparison of silage from ordinary field corn with silage from large-growing silage corn for use in the rations of fattening lambs. Ohio.

Value of legume hays and straws for fattening lambs. Wash.

Fall forage for fattening lambs. Missouri.

Lambs, feeding and fattening. (Cont.)

Comparative rations for fattening wether lambs, to determine the length of time cottonseed meal can be fed in large quantities before poisonous effects become apparent; the value of silage when fed with alfalfa hay and ground kafir; and a comparison of the feeding value of ground and whole kafir. Okla.

Fattening western lambs: To compare limited with full feeding of corn to fattening lambs. To compare clover hay and oat straw as roughages fed with corn, corn silage, and cottonseed meal to fattening lambs, and restricted and liberal feeding of cottonseed meal and linseed meal as supplements to rations composed of corn, corn silage, and dry roughage, and to verify the results of previous feeding trials. Ind.

Ground feterita, milo, kafir, and corn for fattening lambs. Tex.

Linseed meal v. cottonseed meal v. gluten feed for fattening lambs. Wis.

Tornillo bean lamb feeding experiments, in order to obtain information as to their use for fattening or as a substitute for grain or a portion of it. N. Mex.

Beet sugar by-products for lambs. Colo.

A study of the rate, economy, and character of gains produced by lambs marketed at different ages. Ohio.

Methods of producing more and better lambs in Nevada range flocks, including lambing under shelter; use of better bucks; saving bummer lambs; feeding concentrates to ewe bands in winter on the open range; feeding ewes which lamb under shelter to secure a richer and more abundant milk supply. Nev.

The effect of calcium, protein, and phosphorus fed pregnant sheep and swine upon the size, vigor, bone, coat and condition of offspring. Iowa.

The effect of iodine fed pregnant ewes upon size, vigor, bone, and condition of offspring. Iowa.

Wool.

Wool investigations. Wyo.

A study of the inheritance of wool production. Ohio.

Effect of various factors upon the wool and form of the sheep. Mont.

Alkali and weathering studies with wool. Wyo.

The effect of rations containing a high percentage of sulphur upon wool fiber. Wyo.

Goats.

To encourage the breeding of improved milch goats and to ascertain the degree of hardiness possessed by the different crosses. Guam.

Breeding Toggenburg goats (subject to procuring pure-bred stock): To see if goats will thrive and adapt themselves to Alaska conditions. Alaska.

Milch goat improvement. To determine the milk-producing capacity of the native goat and the improvement that may be expected by the use of pure-bred bucks from a milk breed such as the Toggenburg. Records of the cost of producing milk will also be kept. N. Mex.

Goat feeding tests, to determine the most desirable feeds and feeding methods in connection with the production of pure-bred and grade milch goats. Guam.

Improving grade Angora goats through selection, making use of registered Angora bucks of superior breeding. Tex.

ANIMAL HUSBANDRY, SWINE

General.

Physiological effect of heterozygosis in swine. Iowa.

Individuality of studies of swine. Iowa.

Methods of growing pigs. Penn.

Raising pigs without grain. W. Va.

The influence of sulphur upon development of swine with special reference to the hair growth. Iowa.

Hog raising: To show how best to handle hogs and to breed pure-bred stock for sale as farm demonstration work. Alaska.

Work with swine at Highmoor. Maine.

To determine the condition and profits in producing pork by the suburban residents in the backyard. Md.

Breeds and types, breeding.

Heredity studies with swine. Iowa.

Transmission of syndactylism in swine. Ill.

Hogs: Maintaining and improving the herd by the use of good sires. (North Platte Substation) Nebr.

Swine breeding experiments, to note the inadvisability of raising breeding stock from gilts. Md.

The breeding of young sows. W. Va.

Swine breeding, to encourage the breeding of an improved type of hogs; and to determine the degree of hardiness possessed by the progeny of pure-bred Berkshire hogs under Guam conditions and to evolve a strain of hogs for Guam resulting from different crosses of Berkshires on native hogs for the purpose of attaining maximum hardiness, size, feeding qualities, etc. Guam.

Experiments in the "upgrading" and better management of the types of hog found in the mountain districts of Kentucky. Ky.

Breeds and types, breeding. (Cont.)

Type test with swine. Iowa.

Experiments with bacon type and lard type hogs. Ohio.

A study of swine types covering growth, feed requirements, visceral development and carcass production, determining difference existing and causes therefor. Iowa.

A study of the effects of the periods of gestation and lactation upon the growth and composition of swine. Missouri.

Brood sows, maintenance and management.

Summering sows. Iowa.

Wintering pregnant sows. Iowa.

Maintaining brood sows. Penn.

Maintenance of brood sows: To determine the economy of forages and leguminous hays in ration for breeding swine, and to compare the efficiency of different leguminous hays when fed to brood sows. Missouri.

Comparison of rations, methods of shelter, and methods of management for wintering brood sows. Wis.

Maintenance of brood sows, cost and methods of feeding. Mont.

A comparison of rations for brood sows and for suckling pigs. Ohio.

Legume hays v. tankage as proteid supplements for brood sows. Relative value of various legume hays in cheapening the winter ration. Influence of the use of these on the size and vigor of pigs produced. Ark.

Dry lot rations for swine.-- Fattening breeding sows. Iowa.

Cost of production. (See Rural economics, cost of production)

Feeding, general. (See also Feeding stuffs and animal nutrition, animal nutrition)

Feeding standard studies. Iowa.

Dry lot rations for swine. Iowa.

Ration experiments with swine. Ark.

Rations for fattening hogs. Nebr.

Fattening growing barrows. Wyo.

Feeding, general. (Cont.)

Suitable rations for fattening hogs: To compare corn and Indiana grown barley as fattening feeds for hogs; to study methods of feeding barley with tanlage and with corn and tankage, the effects of high fiber content in a mixed fattening ration; the effects of high fiber content on the appetite of the hog and to demonstrate the feeding principle of suitability of feeds for specific purposes. Ind.

Tests of various rations for finishing. Kans.

Rations for pigs at weaning time. Missouri.

Relation of better preparation of feeding stuffs and different methods of feeding upon the rate and economy of gain put on by fattening swine. Missouri.

Growing and fattening spring pigs for market: To compare full feeding of grain to hogs in pasture for early fall marketing and growing shoats on pasture followed by full feeding in dry lot, also to compare some principal forage crops for growing shoats and fattening hogs. Ind.

Experiments in feeding pigs. Mass.

Fattening hogs for show purposes. (Union Branch Station) Oregon.

The value of alfalfa as a supplement to a diet of corn and tankage and kafir and tankage, respectively, when fed continuously to three generations of swine. Kans.

To determine the most profitable way of utilizing the corn crop as a feed for swine. Md.

Grain sorghums v. corn for fattening swine. Ark.

Growing and fattening hogs for market: To determine the value of soy beans as a supplement to corn. Ill.

Value of cull apples for fattening hogs. The replacement values of barley by apples and the feeding value of apples in terms of the nutrients they contain. Wash.

Beet molasses as feed for young hogs. The value of tankage as a winter feed for brood sows and young pigs. Utah.

Cane molasses for hogs. To determine the extent to which the palatability of a ration is increased by the use of molasses in connection with shorts or barley. Oreg.

The use of blackstrap molasses to take the place of part of the corn in a corn-shorts tankage ration. Miss.

Economic utilization of crops for the production of pork. Wash.

Residual effect of forage crops for swine. Missouri.

Feeding, general. (Cont.)

To determine the feeding value for swine of certain feeds and pasture crops that may be produced locally. Guam.

To determine the value of some uncommon by-products feeds as a feed for swine. Md.

Forage crops for hogs: Hogging off.

Forage crops for swine. Calif., Iowa.

Forage crops for hogs. W. Va.

Forage crops for growing and fattening swine. Ark.

Forage crop experiment with swine on different kinds of pasture and fed varying amounts of grain. Mont.

Grazing experiments with hogs - alfalfa supplemented with corn. (South Mississippi Branch Station) Miss.

Corn and soy bean grazing for hogs. Miss.

"Hogging-down" corn. Iowa.

To determine the best size and age of pigs for hogging-off corn and the economy of fattening hogs by this method, the best variety of corn for the purpose; to learn what proportion of the seasons will sufficiently mature corn for it to be available for hogging-off. N. Dak.

Experiments in the hogging-down of soy beans, cowpeas and corn, and comparing velvet bean meal, tankage and soy bean meal as supplements to corn meal in feeding hogs. Ky.

A comparison of different varieties and different methods of planting soy beans in corn for silage and for hogging down. Iowa.

Value of bur clover pasture for pigs in terms of grain saved. N. C.

Forage crops for swine. Methods of pasturing rape. Iowa.

Experiments with field peas in pork production. -- Hogging-off field peas. Idaho.

Grazing peanuts with hogs v. direct selling of peanuts. Ala.

Limiting grain on alfalfa pasture for growing pigs. Wyo.

Comparison of forage crops for swine and of concentrates and supplements to feed on forage. Wis.

(709)

Forage crops for hogs: Hogging-off. (Cont.)

Hog grazing experiments. Grazing on winter crops of oats and rye followed by legume crops, and on legumes planted in corn followed by sweet potatoes. (North Louisiana Experiment Station) La.

Comparative tests of rape, crimson clover, bur clover, alfalfa, rye, and barley as winter grazing crops for hogs. S. C.

Hog pasture experiments to find a suitable sequence of grazing crops for hogs and the necessary concentrates to produce fat pork by the end of the grazing season. Va.

Hogs: Grazing and feeding off crops in the field, including corn and cow-peas, corn and soy beans, soy beans, and sweet potatoes, shrimp meal being fed the hogs when on sweet potatoes. La.

To compare the practice of hogging-off crops in field to feeding in dry lot; to compare the practice of growing protein supplements in the field with corn and the practice of adding protein supplements to corn in the field at the time of hogging-off and to compare supplements to be used with corn which is hogged-off. Ind.

To determine the value of one acre of permanent pasture for pigs in terms of feeds saved. N. C.

Comparison of all available forage crops for the economic pasturing of pigs. To determine the ages at which pigs can make most use of green forage crops. A study of the quantity of grain to supply to make the most economic use of green forage crops. N. Dak.

Garbage for hogs.

Use of garbage for hogs. Ariz.

Tests of feeding value of garbage for hogs. Mich.

Comparison of feeds for fattening hogs by using garbage, corn, kafir, barley, and oats for fattening. Okla.

Garbage for fattening pigs, including garbage alone and with grain. Oreg.

To determine if cooked citrus fruit rinds have any poisonous or toxic effects on hogs. Md.

Grain rations for hogs.

Limited grain rations for hogs. W. Va.

Comparison of methods of preparation of barley for hog feed: To determine the best method of preparing barley by comparing free choice whole and ground, self-fed ground and mixed with tankage and hand-fed ground, whole and whole and soaked. Okla.

Barley v. corn for fattening swine. Missouri.
(709)

Grain rations for hogs. (Cont.)

Barley v. corn for swine and comparison of methods of preparing barley. Wis.

Barley and wheat for pigs when supplemented with tankage. Mont.

A comparison of the preparation of corn: A study of various protein supplements in fattening swine. Penn.

Hominy feed v. corn for fattening swine on forage. Missouri.

Comparative tests of rye, barley, and corn for hogs. Mich.

Comparison of feeds for fattening hogs by using corn, kafir, barley, oats and garbage for fattening. Okla.

"Tin plate" middlings compared with ordinary middlings for fattening swine. Ohio.

Feeding hogs- comparing darso, kafir, and corn in fattening hogs by use of the self-feeder. Okla.

Mineral supplements for hogs.

To determine the economic and nutritive value of minerals for growing and fattening hogs. Ill.

Mineral and organic acids for swine. Iowa.

The effect of calcium, protein, and phosphorus fed pregnant swine and sheep upon the size, vigor, bone, coat, and conditions of offspring. Iowa.

The effect of fixed alkali and carbonate on the growth and well-being of swine. Iowa.

The comparative value of calcium carbonate, floats, precipitated bone flour and steamed bone flour as mineral supplements of swine. Ohio.

To determine if seven to eight ounces of salt will kill pigs of different sizes and how much salt will be eaten by different sized pigs. N. C.

Protein supplements for hogs. (For peanuts see Soft pork)

Fish meal v. tankage for pigs. Oreg.

Comparative tests of fish meal and tankage in pork production. S. C.

Fish meal v. tankage as a supplement to corn in rations for fattening swine. Missouri.

To compare value of fish meal with tankage as a protein carrier for fattening hogs. N. C.

Protein supplements for hogs. (Cont.)

The value of fish scraps as swine food. N.Y. Cornell.

Semi-solid buttermilk y. tankage as a protein supplement in rations for fattening swine. Missouri.

Buttermilk and its products for swine. Iowa.

To determine the relative efficiency and economy of two buttermilk products in the growing of market hogs. N.J.

Vegetable proteins and digester tankage in rations for growing pigs. (Union Branch Station) Oreg.

The value of Tornillo bean as a food for swine; in what manner it should be fed for best results. N. Mex.

Soy beans and peanuts for fattening hogs: To determine the rate of gain from each feed and to study the effects of these feeds upon the carcasses of the hogs. N. C.

The relative value of tankage, peanut meal, cottonseed meal, and alfalfa hay, as supplements for kafir grain, when fed to 100 lb. hogs. Okla.

Barley and wheat for pigs when supplemented with tankage. Mont.

Comparison of protein supplements to barley and corn for swine; skim milk, whey, tankage, linseed meal and wheat middlings when fed separately and in combination. Wis.

Protein supplements for pork production. Wash.

A comparison of various protein supplements for fattening pigs on concentrates and forage crops. Penn.

A study of various protein supplements in fattening swine. Penn.

Comparative value of various protein supplements in pork production. Calif.

Efficiency of various protein mixtures for growth in swine and milk production in dairy cows. Wis.

To determine the relative value of various protein supplements for feeding swine. Ark.

Feeding grains and by-products of factories to pigs. S. Dak.

Comparing vegetable and animal protein for fattening hogs. Idaho.

Two and three per cent rations for growing pigs. Oreg.

Protein supplements for hogs. (Cont.)

A study of different kinds and proportions of feeds suitable for use as supplements to corn for swine. (Soy bean oil meal has been studied). Ohio.

Supplemental feeds for swine: Skim milk, tankage, roots, alfalfa, etc. Mont.

Comparative test of the value of velvet bean meal, peanut meal, and cotton-seed meal as protein feeds for hogs. S. C.

Supplements to corn for fattening hogs, to compare the feeding value of some of the most important protein supplements. Ind.

Study of fat soluble A content of feeds commonly supplementing corn in feeding hogs. Nebr.

Self-feeders.

Self-feeding v. hand-feeding growing breeding gilts. Wyo.

A comparison of hand-feeding and self-feeding, for swine. Ohio.

A comparison of the self-feeder v. hand-feeding for young pigs on forage. Penn.

Comparison of hand-feeding and self-feeding methods of growing pigs. Kans.

To determine the economy and advisability of self-feeders for fattening swine. Ark.

The use of self-feeder in developing breeding gilts. Del.

Feeding hogs: Comparing darso, kafir, and corn in fattening hogs by use of the self-feeder. Okla.

Soft pork, in connection with feeding peanuts, etc.

A study of the factors influencing production of soft pork. S. C.

Soft pork investigations: To study the effect of various feeds upon the character and quality of pork. Ind.

Effect of various feeds upon the quality of the pork product. A comparison of various rations with peanuts. Okla.

Effect of some southern feeds on the properties of lard. Ala.

Quality of pork from rice bran. Ark.

Study of the effects of rice bran when fed in various combinations with corn chops and tankage on the quality of pork. Tex.

Soft pork: Grazing on peanuts and finishing with corn and tankage. Miss.

Soft pork, etc. (Cont.)

The relation of peanuts and peanut meal when fed to hogs to softness and other changes in the pork. Ga.

Experiments to determine how much peanut meal could be fed to hogs and still produce a hard pork. Fla.

The use of peanut meal for fattening hogs. Fla.

Improving the quality of peanut-fed hogs by finishing them in dry lots on corn and tankage, corn and velvet bean meal, and corn and cottonseed meal. Ala.

Length of time to harden carcass after eight weeks grazing period on peanuts, by killing three hogs at four week intervals after the grazing period is finished. N. C.

Peanuts for fattening hogs: To determine length of time necessary to make the hogs soft, then the length of time necessary to make the hogs hard, by killing two pigs out of each lot at intervals of two weeks. N.C.

Effects of supplements of corn or tankage for shoats hogging off peanuts. Ala.

ANIMAL HUSBANDRY, HORSES AND MULES.

Breeding.

Breeding experiments with horses and mules. S. C.

To encourage the breeding of improved horses, and to determine the degree of hardiness possessed by progeny of pure-bred Morgan horses under Guam conditions, and to evolve a strain of horses for Guam resulting from different crosses of Morgans on native mares for the purpose of attaining maximum hardiness, size, feeding qualities, etc. Guam.

Horse and mule production in West Virginia. W. Va.

Mule breeding. Miss.

Cost of production. (See Rural economics, cost of production).

Feeding.

Growing draft colts. Missouri.

Feeding pure-bred draft mares from weanlings to two-year-olds. Ill.

Feeding. (Horses and mules). (Cont.)

Oat straw as winter roughness for farm work horses, fed in conjunction with a grain ration of two parts corn, two parts oats, one part bran and linseed meal to balance the ration. Missouri.

Barley v. oats for work horses. Wis.

A comparison of corn and oats for growing fillies and for these animals when used for farm work. Ohio.

Corn and cob meal, linseed meal, and oat straw as a wintering ration for farm work horses. Missouri

Corn silage as a part ration for horses of various ages. Missouri.

To determine the value of horse feeding of certain foods and pasture crops which may be produced locally. Guam.

A study of rations suitable for horses, including digestion of foods and energy values of foods and rations. Mass.

ANIMAL HUSBANDRY, POULTRY

Breeding.

Inheritance in egg production. Data on maturity as indicating productive ability, inheritance of size and color of eggs and similar characters. Nebr.

Inheritance of high egg production. Oreg.

~~Sex~~ linked inheritance in poultry. Missouri.

Inheritance in comb type. N.Y. Cornell.

Study of Mendelian inheritance and linkage of egg production and feather color. Maine.

Studies of inheritance of blue in Andalusian chickens; improvement of mongrel flocks through the use of standard-bred cockerels. Kans.

To study through the breeding feature of the egg-laying and breeding stations, the behavior of fecundity in inheritance. N.J.

To study the mode of inheritance of fecundity in domestic fowls and to make such matings as will test such mode of inheritance. N.J.

A determination of the mode of inheritance of various characters of poultry and a study of other factors governing form and function, including breeding for increased egg production; the relation between the primary sexual organs (testes and ovary) and the remainder of the organism; and study of the hatching quality of eggs from the statistical and genetic standpoint. Mass.

Breeding. (Cont.)

Poultry breeding. Utah.

Breed improvements. Oreg.

Inbreeding poultry. N.Y. Cornell.

To test the effect of inbreeding on the quality of the stock. Maine.

Poultry breeding: Continued close breeding of fowls. Conn. Storrs.

Studies on inbreeding with Rhode Island Red fowls. Wis.

Effect of close inbreeding on egg production and on fertility and hatchability of eggs. Oreg.

Hybridizing poultry: Reciprocally crossing barred Plymouth rocks with other breeds. Experiments bearing on the inheritance of linked characters. Maine.

Selection for vigor. W. Va.

To encourage the breeding of improved breeds and varieties of chickens; the determination of the adaptability of various breeds and the development of certain desirable crosses. Guam.

Breeding experiments with poultry, to study the effects of selection and inbreeding. N.Y. State.

To study the standard-bred quality of poultry and to determine the best methods of improving same through breeding and selection. N.J.

Breeding experiments with White Leghorns- a study of fecundity. Conn. Storrs.

Breeding for egg production. Idaho.

Effect of breeding and selection in increasing egg production through the year. Mont.

The breeding of pure-bred poultry for high egg production. Ky.

Breeding for egg production (using Rhode Island Reds). Iowa.

Breeding single comb White Leghorns and Barred Plymouth Rocks for egg production: To improve egg production by breeding and to observe physical characteristics which indicate high egg production. Ind.

Breeding studies with single comb White Leghorns, Rhode Island Reds, and Barred Plymouth Rocks, and facts or physical signs which indicate egg production. To determine the influence of the male as transmitting the factor of high egg production; influence of the female as transmitting powers of high egg production; physical signs of high egg production. N.C.

Egg production: The best layers in the egg laying contest to be used as breeding stock for the development of better laying strains of standard varieties of poultry. Nebr.

Breeding. (Cont.)

Relative influence of sire and dam in the transmission of egg laying qualities. Oreg.

Developing a high producing flock from common hens. Ark.

Poultry breeding experiment, to increase egg yield, uniformity of eggs, prepotency of egg production and breed characteristics; to compare size, vitality, development and vigor of chicks hatched from eggs of the same hen in the first, second, and third laying years. N. Mex.

To develop families of fowls, carrying lines of high egg production, the progeny of such, in succeeding generations, to be distributed throughout the State at nominal cost, with the object of improving existing poultry stock. N.J.

To produce better laying strain of poultry by careful selection and breeding. N. Dak.

Age as a factor in poultry breeding. Missouri.

Chicks, brooding and feeding.

Experiment in chick feeding. Missouri.

The influence of a liberal supply of protein and ash constituents of animal origin in a ration for growing chickens as affecting the later fecundity of the females. W. Va.

Soy bean meal v. beef scraps and skim milk for the growing chicks. Ky.

To determine a ration and method of feeding and care of young chicks which will permit the normal growth in confinement without the heavy mortality usually experienced at the age of 6 to 12 weeks. Ind.

Comparison of rations for chicks, including a study of natural and artificial brooding; a comparison of simple and variety rations; a study of sour milk as a supplement to rations made up only of grains and others that contain a number of home grown and commercial feeds. Ohio.

Study of growth in chicks with reference to the relation between hatching time and the profit to be derived from the sale of broilers and roasters. Mass.

Study of the relation of chick vitality to its lime-phosphorus ratio at time of hatching. Mont.

Calcium requirements of chickens. Wis.

Deficiencies of feeds fed hens as affecting the vitality of chicks. Kans.

To determine the effectiveness and economical difference in operating the different types of brooders which are practical for farm use. N. Mex.

Chicks, brooding and feeding. (Cont.)

Test of the more successful of the coal stove brooders with the view of determining the most efficient. To secure data on the most successful management to be followed for the long continuation of a poultry plant. Maine.

Problems of incubation and brooding. Mich.

Cost of production. (See Rural economics, cost of production.)

Egg laying contests, exhibitions, and routine records.

Arkansas State egg laying contest. Ark.

National egg laying contest. Tex.

Statistical study of data collected in the last nine years in the egg-laying contest, by arrangement with the Carnegie Institution for experimental evolution. Conn. Storrs.

To improve the poultry stock of New Jersey through the direct benefits of the egg-laying and breeding stations, to the contestants. By the trap-nesting and pedigree-breeding of the original birds and the production of progeny from such birds which are later returned to the owners for their own breeding purposes. N. J.

To encourage the greater production of standard-bred poultry in New Jersey through the holding of more and better poultry exhibitions. N. J.

To establish in New Jersey three egg-laying and breed testing stations, one to be located at Vineland, in southern New Jersey, one in Bergen County, in northern New Jersey, and one in the vicinity of Hightstown, in central New Jersey. N. J.

To make possible the registration and advance registration of poultry on a basis of standard-bred quality and productive ability. N. J.

Improvement of poultry through the organization, aid, and superintendence of poultry exhibits, including provision for instruction in poultry raising, and to offer premiums for excellence in quality of birds exhibited at such exhibitions. N. J.

To develop egg-laying contests as egg-laying and breeding stations, each contest to continue for a period of three years, one contest to start each year. N. J.

Improvement of poultry through the organization, aid, and superintendence of poultry exhibits, including provision for instruction in poultry raising and to maintain a classified list of winnings at said exhibition, of birds winning under this project. N. J.

To make a detailed study of exhibition quality, including methods of breeding and the preparation of birds for exhibition. N. J.

To organize aid and superintend poultry exhibitions, in order to insure the efficient and sound conduct of same. N. J.

Egg laying contests, etc. (Cont.)

To conduct educational meetings and to stage educational exhibitions as a part of poultry exhibitions. N.J.

Trap nest records. Ohio.

Exact and detailed records of all matters concerning poultry, including autopsies of all birds dying, etc. Maine.

Egg laying, physiology and correlations. (See also Genetics)

To study the behavior of egg shell color in inheritance. N.J.

To determine and study the factors that influence egg shell color. N.J.

To determine the extent and nature of the variation in the shell color of egg produced by certain standard breeds of poultry. N.J.

Distribution of egg production. N.Y. Cornell.

To study and determine the factors that influence the amount and distribution of egg production in domestic fowls. N.J.

To study the behavior of fowls with regard to the amount and distribution of egg production. N.J.

To study the fowl's individual egg producing ability and the factors influencing or affecting same. N.J.

Early laying maturity in relation to good laying.. Oreg.

Influence of season of hatching on egg production and cost. N.Y. Cornell.

Influence of climatic conditions on egg production. To determine if single comb White Leghorns of same breeding and raising- one half at Winnepeg and the other half at Raleigh- both flocks receiving the same feed in kinds and amounts and normal daylight as feeding hours, will show the same egg production curve. Do birds at a southern latitude lay earlier and finish their year's laying earlier? N.C.

To determine relations existing between the distribution of egg production and total yearly performance. N.J.

Relation between pigmentation of the parents and the hatching quality of the eggs. N.Y. Cornell.

To determine the relation of pigmentation to egg production. N.J.

Date of hatching to laying of first eggs. The relationship between the date chicks are hatched and the time they lay their first eggs, in females of the various breeds, the rate of development in males according to time of hatching and the relationship between the date first egg is laid and subsequent winter egg production. Okla.

Egg laying, etc. (Cont.)

First year's production as correlated to subsequent years. Oreg.

Influence of range of egg laying on fertility, hatchability and egg laying of offspring. Okla.

Comparison of breeding and varieties for egg production. N. Y. Cornell.

The influence of age on the egg production of laying hens. Ark.

The mechanism of the internal secretions and their relation to egg production and to secondary sexual characters. Mechanism of anaphylactic shock and castration and transplantation experiments. Maine.

The effect of rations previous to hatching season on egg production, fertility, and hatching quality at the breeding season. N. Y. Cornell.

Comparison of egg production as regards feed requirement, numbers and distribution, by pullets hatched in February, April, and June, Ohio.

The influence of quality and quantity of rations upon egg production. To determine the factors influencing the amount of food consumed by laying hens. N. J.

External characteristics of the hen as indicating laying capacity. Oreg.

To determine the relation of body conformation (body type and capacity) to egg production. N. J.

To determine a method or methods of accurately measuring a fowl's producing ability by a study of external characters. To include measure of past and present performance and prediction of future performance. N. J.

Is type or conformation correlated to egg producing qualities? Oreg.

The relation of physical characters to egg production. N. Y. Cornell.

To determine the relation of detailed minor structural and functional differences to egg production. N. J.

Value of heating water for winter egg production. Okla.

To determine the relation between quantity of vitamins in the eggs and the rations fed to the hens producing the eggs. Kans.

Feeding and fattening, general. (See also Feeding stuffs and animal nutrition-animal nutrition.)

A comparison of rations for poultry. Penn.

Digestion experiments with poultry. N. C.

To determine the most desirable feeds and feeding methods in connection with chicken production under local conditions. Guam.

Feeding experiments with poultry relating to the importance of coarser vegetable foods and the utilization of waste foods. N. Y. State.

Feeding and fattening, general. (Cont.)

Green food for egg production. W. Va.

The use of barley for laying hens. Calif.

Comparison of corn and wheat alone and combined as the principal ingredients of rations for laying hens. Ohio.

Feeding oats to poultry. Iowa.

The influence of quality and quantity of rations upon egg production. To study miscellaneous nutrition problems which may appear as a result of the completion of certain phases of this project. N.J.

A study in the rate and method of digestion of feeds on egg production. N.Y. Cornell.

The influence of quality and quantity of rations upon egg production. To evolve and recommend to the poultry fraternity of New Jersey, improved and efficient rations for egg production. N.J.

To obtain more accurate knowledge of food requirements of hens for growth and egg production by study of effect of feeding one kind of grain with the addition of chemical preparations. Conn. Storrs.

Poultry feeding experiment, to test the value of common local grain and by-products as poultry feeds, such as cottonseed meal, whole grain comparisons- Tornillo bean meal. N. Mex.

To determine the value of certain grain rations for laying hens. Idaho.

A study of several feeds, including peanut meal to determine the relative efficiency and economy in egg production. Ala.

To devise a simple ration for feeding poultry. Md.

Simple and variety rations for laying hens. Ohio.

Different methods of supplying grain and mash for laying hens. Ohio.

To compare the relative value of warm wet mashes and dry mashes for winter egg production and the effect of the above mashes upon the weight of the eggs. Okla.

The influence of quality and quantity of rations upon egg production. To study the effect of feeding varying proportions of mash and grain to laying hens. N.J.

Feeding poultry for market. Iowa.

Feeding demonstrations: To obtain records of egg production, feed consumed, labor costs and other items of expense and income on a large flock kept under farm conditions and fed and managed by Purdue methods. Ind.

Feeding pullets for egg production with artificial illumination. N.Y. Cornell.

Feeding and fattening, general. (Cont.)

Crate fattening roasters. Mont.

Cockeroels, capons, and pullets compared for meat production, as regards rate, economy, and character of product. Ohio.

To determine the most efficient methods in broiler production, including the growing and fattening of broilers; the efficiency of shipping alive or dressed; together with a study of seasonal demand and price variation. N.J.

Feeding, use of protein supplements.

To determine the value of certain protein feeds for laying hens. Idaho.

Rations containing various quantities of proteins for laying hens. Ohio.

The influence of quality and quantity of rations upon egg production. To determine the proper amounts and the most efficient sources of protein in rations for laying hens. N.J.

Animal v. vegetable protein in a laying ration. Ky.

A comparison of vegetable and animal sources of protein for laying hens. Ark.

Use of animal food in the mash. Iowa.

Effects of animal proteins on winter egg production. To determine the per cent of meat scrap which when fed in a dry mash with other feeds will give the most economical egg production during the winter months, the influence of feeding various per cents of meat scraps upon the weight of the fowl, weight of egg and the amount of feed consumed, a comparison of the value of meat scraps and tankage as a winter egg producer and to compare the mortality of the various pens. Okla.

Practical poultry feeding studies. Animal proteins (dried buttermilk, meat scrap, dried blood, and digester tankage) v. vegetable proteins (soy bean meal and peanut meal); dry lot v. range; influence of velvet beans on growth and egg production and the same for cottonseed meal; influence of lights on egg production; influence of straw lofts on egg production. N. C.

To find the proper proportion of animal protein in the form of meat scrap in a laying ration for White Plymouth Rocks, and its bearing on the per cent of meat scrap variability in quantity of meat scrap, which can be fed without influencing egg production, feeding value of meat scrap; results of too much meat scrap on egg production, health, fertility, hatchability, etc. Ind.

To compare the value of protein in meat scrap, cottonseed meal, peanut meal, high grade tankage and buttermilk as a suitable source for egg production and the effects of each on the breeding qualities of poultry. Okla.

The influence of quality and quantity of rations upon egg production. To determine the relative efficiency of rations carrying varying amounts of meat scrap as a source of animal protein. N.J.

Feeding, use of protein supplements. (Cont.)

Comparison of feeding value of beef scraps, tankage and cottonseed meal as feeds for egg production. Tex.

The value of sour skim milk, beef scrap, cottonseed meal, gluten meal and oil meal in rations for egg production. Missouri.

Comparison of tankage and meat scrap for laying hens. Ohio.

Poultry feeding: A comparison of corn silage, buttermilk, grain, and meat scraps, with commercial feeds. Utah.

Feeding value of soy bean oil meal for Barred Plymouth Rock pullets. To find if soy bean oil meal can be substituted for tankage in a ration for Barred Plymouth Rock pullets, its influence on fertility, hatching power, egg production, health and cost. Ind.

Feeding value of soy bean oil meal in a laying ration for White Leghorn pullets. To find if soy bean oil meal can be substituted for tankage in a ration for White Leghorn pullets, its influence on fertility, hatching power, egg production, health, and cost. Ind.

Incubation, fertility, and hatching of eggs.

Incubation studies. Utah.

Problems of incubation and brooding. Mich.

Incubation tests, to study the different kinds of incubators and their efficiencies under arid conditions. N. Mex.

Study of factors influencing the incubation of eggs, both artificial and natural. Mont.

Egg hatching investigations, to determine the length of time eggs may be kept for purpose of incubation; and to study the effects of different methods of handling eggs previous to incubation. Md.

Studies of factors influencing number of eggs fertilized by one copulation. Mich.

Studies of factors influencing length of time necessary for male bird to be in pen to secure highest fertility point. Mich.

Determination of body temperature of hen during incubation. Mich.

The influence of subnormal temperatures upon the growth of the chick embryo during the process of incubation. Conn. Storrs.

To determine results of subjecting eggs during incubation to varying degrees of temperature and its relation to optimum temperature for artificial incubation of hen's eggs; difference in results secured from White Leghorn and White Plymouth Rock eggs; variation of optimum temperatures in different types of incubators, loss of moisture as a factor of difference in temperature. Ind.

Incubation, fertility, and hatching of eggs. (Cont.)

Artificial incubation. To determine the effects of moisture, turning of eggs, cooling of eggs, position of eggs in tray, ventilation, steaming of eggs at pipping time, sprinkling of eggs at pipping time, freak eggs. Okla.

The amount and causes of embryo mortality. To determine the factors causing the mortality of chick embryos. N. J.

The amount and causes of embryo mortality: To determine the economic loss due to the prevalence of this mortality. N. J.

The amount and causes of embryo mortality: To evolve means of eliminating and controlling same. N. J.

Study of hereditary factors as possible causes of inshell deaths and consequent low hatchability of eggs and effects of single factors and their transmission in inheritance. Conn. Storrs.

Studies of individuality of the hen and other factors influencing hatchability of the eggs. Mich.

Management and feeding as related to vigor of germ in hens' eggs. W. Va.

Management, housing, and artificial illumination.

To determine the items and values which go to make up the sources of revenue in operating a poultry plant. N. J.

To determine the items and amounts entering into the expenses of operating a poultry plant. N. J.

To determine itemized inventories and values needed to organize and equip a suitable plant for poultry and egg production. N. J.

To determine the efficiency of modern poultry practices as measured by labor income, including farm poultry management and commercial poultry management. N. J.

Comparison of wide range with close confinement of poultry. Ohio

Housing pure-bred poultry. Ky.

To devise and improve poultry equipment and methods used in handling poultry. Md.

Establishing systems for the detection of nonproductive hens in the flock. Mich.

Lighting poultry houses. Utah.

The effect of illumination on production. N. Y. Cornell.

Artificial light in egg production, using lights, morning and night in the laying house. Mont.

Management, housing, and artificial illumination. (Cont.)

An investigation to determine the value of artificial lighting to increase length of working day of laying hens in winter and thus increase winter production of eggs. Calif.

To determine the influence of artificial illumination upon egg production when applied to February hatched pullets, April hatched pullets and yearling hens. N.J.

To determine the most efficient hours for running the lights on layers in artificial illumination. N.J.

To determine the general efficiency and practicability of the entire lighting question. N.J.

To find the influence of electric lights in a poultry house between 8 and 9 p.m. on two-year-old Leghorn hens. Ind.

To determine ways and means of solving the additional labor problems involved in running artificial illumination on layers. N.J.

To determine the material, labor and operating cost of providing artificial illumination when various methods of lighting are used. N.J.

Marketing and distribution.

Market experiments: Fleshing broilers to determine best feeds and methods for best results using southern poultry feeds; shipping shrinkage experiments with broilers to determine if means can be devised to curtail the shrinkage due to shipping; and egg shipping experiments to get shipping experience and learn facts as to best methods. N.C.

To determine the most efficient methods of marketing fowls, of the various types and breeds, including methods of dressing and packing as well as a determination of seasonal demand and price fluctuations. N.J.

To show changes which are taking place in the business side of poultry keeping, year after year, and with the information at hand, to predict conditions which may be expected in the future. N.J.

A study of methods prevailing in the market egg trade, including methods of packing, together with losses from improper handling and packing. Also sources of supply with receipts on the leading egg markets, with a study of the various classes of eggs and price fluctuation. Also a study of cold storage movement of eggs. N.J.

Causes of loss of eggs and poultry in transit. N.Y. Cornell.

Egg distribution to farmers for demonstration and improvement. N. Mex.

Distribution of pure-bred cockerels. W. Va.

Miscellaneous.

Poultry. (North Platte Substation) Nebr.

Determination of egg grades. N.Y. Cornell.

Increasing weight of brown and white eggs. Okla.

Meat qualities and egg production. Oreg.

Determination of normal growth curves of Barred Rocks and White Wyandottes.
Conn. Storrs.

To determine the factors which influence profits and the relative importance of such factors in poultry raising. N.J.

To determine the size and organization of flocks best suited to poultry and egg production. N.J.

To determine the financial possibilities and profit resulting from poultry raising both as a farm and a commercial enterprise. N.J.

To develop a system of judging and culling fowls on a basis of their productive ability which shall be capable of practical application to everyday commercial and farm poultry practice. N.J.

To determine the most efficient methods of capon production, including the details pertaining to the operation of caponizing; the best methods of growing and fattening; the types and breeds of fowls best adapted for caponizing, with efficiency methods of dressing and packing; including also seasonal demand and price fluctuations. N.J.

Analysis of what the internal secretions may be. Maine.

Poultry experiments: Histological study of the tissues to determine, if possible, the cellular structure of the elements making internal secretions. Maine.

Relation of keel and pelvic bones to shape and production. N.Y. Cornell.

Broodiness in poultry. Mass.

To determine how best to present educational poultry work for country people. N.C.

DAIRY FARMING

Breeding. (See also Genetics)

The transmission of sex in dairy cattle. Ill.

Inheritance in dairy cattle. To study the inheritance of those characters which are directly and indirectly connected with milk production. Ill.

To determine the best method of developing a strain of dairy cattle adapted to Great Plains conditions. To study a cooperative breeding enterprise and to determine feasible means of procedure. N. Dak.

Breeding. (Cont.)

To develop a high-producing herd by the use of proven sires; the value of a good sire by the increased production of his daughters over that of their dams. To compare the results of developing a herd by the use of good sires v. the use of high-producing females. N. C.

Breeding work with dairy cows. N.Y. Cornell.

Effect of inbreeding. Ohio.

A comparison of line breeding and out-crossing as systems of breeding dairy cattle. S. C.

Inbreeding and line breeding compared with out-crossing as regards its effect upon dairy cattle, their milk and butterfat production, conformation, fecundity and general characteristics. Idaho.

A comparison of line breeding with out-crossing and inbreeding with out-crossing in the breeding of dairy cattle, N.J.

To analyze by cross-breeding experiments, by private records and advanced registry data, the mode of inheritance of the characters found in dairy cattle with special reference to milk yield, butter fat percentage and beef production. Maine.

Analysis of the ability of different bulls within the different breeds, to transmit milk yield and butter fat percentage to their offspring. Maine.

Cattle breeding experiments for milk. The production of hardy milk stock for Alaska. Alaska.

Influence of feed, environment, and breeding on native unimproved cows, and their offspring, as regards development of milk-producing qualities, composition of milk digestive capacity and utilization of feed in dairy and beef production. Iowa.

Dairy herd improvement. Ohio.

Development of dairy qualities in Galloways. To develop a hardy dairy breed. Alaska.

Breeding milking Shorthorns. W. Va.

Breeding dual purpose cattle. To test adaptability of milking Shorthorns to that section of the country. Alaska.

Calves and heifers.

Dairy heifer development. The effect of three rations fed continuously. Kans.

Value of various protein supplements for growing dairy heifers. Comparison of alfalfa, bran, cottonseed meal and oil meal as protein supplements in the feed of calves. Kans.

Calves and heifers. (Cont.)

Rations for dairy heifers during the winter months. To determine the most economical ration for wintering dairy heifers under New Jersey conditions. N. J.

Wintering dairy heifers. Va.

Influence of nutrition of heifers during their growing period upon their subsequent functional activities, size, vigor, and general usefulness. Missouri.

Data on the normal growth of dairy heifers of various ages. To determine a standard for measuring normal growth. N. J.

Calf rations. Ohio.

A study of (dairy) calf rations. Wash.

Experiments in calf feeding. Ky.

Comparison of feed for calves. Iowa.

Self-feeder experiments with dairy calves. Mich.

To determine the practicability of using the self-feeder in rearing dairy calves. Nebr.

Methods of handling and feeding dairy calves. W. Va.

A study to determine the feed required and the cost of raising dairy calves. S. C.

To determine the relative value of peanut meal as compared with cottonseed meal as a protein carrier for developing dairy heifers. N. C.

Study of calf raising on home made calf meals- (mixture of bran, ground barley, oil meal, and ground clover hay). Oreg.

Supplementing whole milk in raising calves. Md.

Raising calves with the minimum amount of milk. Minn.

Substitutes for milk in feeding dairy calves. Ariz.

The rearing of calves on substitutes for skim milk. N. Y. Cornell.

A chemical study of the nutrition of calves. Ind.

Cost of production. (See Rural economics- cost of production).

Feeding experiments, general. (See also Feeding stuffs and animal nutrition, Silage and silage feeding experiments).

Dairy cow feeding experiment. Ky.

Feeding dairy cows, especially with Florida products. Fla.

Winter rations for dairy heifers. Oreg.

Maintenance ration for dairy cows. Vt.

Effects upon milk production of varying amounts of the same feed. Penn. Inst. Anim. Nutr.

Wide, medium, and narrow rations for dairy cows. Ohio.

Amount of grain for dairy cows fed with clover silage or clover or alfalfa hay. Mont.

Cut alfalfa hay as a supplemental feed for purchased grains in feeding dairy cows. N.J.

Soy bean hay v. alfalfa hay for milk production. W. Va.

Dairy cow feeding experiments: Alfalfa hay v. Sudan grass; alfalfa hay v. sorghum fodders. Ariz.

Sunflower silage v. corn silage for milk production. W. Va.

A study of the value of red clover silage for milk production. Penn.

A comparison of corn silage and sorghum silage for milk production. S. C.

On the comparative economy of growing and feeding to dairy cows, silage from early maturing as compared with medium and late maturing varieties of corn. Conn. Storrs.

Corn silage v. cottonseed hulls for dairy cows. Ark.

Feeding cottonseed meal and silage to dairy cows. Tex.

Effect of summer soiling on milk production. (Astoria Branch Station) Oreg.

Dairy farm management: To determine the best combination of crops to be grown for a dairy herd. (Caldwell Substation) Idaho.

Feeding milk cows during the dry period. To determine the effect of plane of nutrition during the dry period and the consequent condition at time of freshening upon the milk and fat production of that lactation period. N.J.

Feeding for milk production: To secure definite data in regard to the feed cost of producing milk with high priced feeds, when cows are fed limited and full rations. N. C.

Development of a soiling crop system for summer soiling for dairy cows. (Astoria Branch Station) Oreg.

Feeding experiments, concentrates.

Dairy rations: To find the best amounts of grain to include in a ration with corn silage. Utah.

Relative value of proteins of different feeds in the rations of dairy cows. S. Dak.

Effect of feeding different amounts of digestible protein to cows for a long period. Vt.

Investigation of the relative economy of heavy and light grain feeding for California dairy cows. Calif.

A study to determine the most economical concentrate to supplement cottonseed meal as a feed for dairy cows in the South. S. C.

Effect of adding protein-rich concentrates to ration for dairy cows of alfalfa hay, corn silage, and grain. Wis.

Hydrolyzed sawdust for feeding dairy cows. Wis.

To determine the value of ready-mixed feeds that are on the market compared with the home-mixed feeds, special attention being given to the feed cost of milk production. N. C.

Twenty per cent y. twenty four per cent protein for dairy cows. Md.

To study the relative economy and efficiency of various methods of preparing corn for dairy cows, including whole ear corn, broken ear corn and cobmeal, shelled corn, and ground corn. Iowa.

Barley y. corn for dairy cows. Wis.

The effect of peanut meal when fed to dairy cows on the qualities of the butter fat and methods by which this feed may be fed without undesirable effects. Ga.

The increase of fat production by the use of cottonseed meal. Iowa.

Velvet bean meal y. cottonseed meal for dairy cows in dry lots. Ala.

Use of peanut meal and velvet bean meal in milk production. Fla.

A comparison of soy beans and oil meal as protein supplements (for dairy cows). Iowa.

Coconut meal y. gluten meal for dairy cows. Md.

On the effect of coconut meal on milk production. Calif.

Feeding experiments, roughage and pastures. (See also Feeding stuffs and animal nutrition, Silage and silage feeding experiments).

Roughage as a feed for dairy cows, Nebr.

Acre value of pasture for dairy cows. Colo.

Soiling experiments with dairy cows, using alfalfa, clover, corn, and sunflowers. Mont.

Use of succulent feeds for milk production. Water requirements of dairy cows on succulent feeds. Digestibility of Sudan grass. To determine the amount of water over and above that in the succulent feed, that is required by milk-producing cows and the correlation between water consumption and milk production. Iowa.

Corn stover silage v. normal corn silage for dairy cows. Wis.

The relative value of wheat hay and oat hay as feeds for young dairy stock and dry cows. Calif.

Comparison of first, second, and third cuttings of irrigated alfalfa hay with each other and with corresponding cuttings of dry alfalfa as feeds for milk production. Wash.

Comparison of alfalfa with red clover for milk production. Ohio.

Sudan grass as pasture for dairy cattle. Kans.

Herd management.

Dairy herd studies. (North Platte Substation) Nebr.

Dairy farm management: To encourage the introduction of dairying as a type of farming for this area of the State. (Caldwell Substation) Idaho.

Dairy farm management: To determine the proper number of animals to be maintained on an 80-acre unit of land and their proper management. (Caldwell Substation) Idaho.

To encourage the introduction of dairying as a means of increasing farm profits and maintaining permanent soil fertility. (Sandpoint Substation) Idaho.

Study of dairy management for Maine conditions. Maine.

A study of the soiling system under Nebraska conditions. Nebr.

Herd improvement and management under coast conditions. (Astoria Branch Station) Oreg.

To determine the influence on milk production of early fall calving against late fall calving. Miss.

The production, handling, and marketing of milk and the making of butter under tropical conditions. P. R.

Milking machines.

A study of milking machines. Iowa.

Testing the efficiency and practicability of cleaning and caring for milking machine parts. Conn. Storrs.

Study of application of methods of cleaning milking machines to farm conditions. N.Y. State.

Milk secretion and production.

Experimental analysis of the heredity factors determining milk and meat production in cattle. Wis.

Efficiency of various protein mixtures for growth in swine and milk production in dairy cows. Wis.

Factors effecting the composition of milk. The effect of pasteurization upon the chemical, bacteriological, and nutritional condition of colostrum. Missouri.

Factors influencing the composition of milk, the influence of the plans of nutrition of the cow. Missouri.

A study of colostrum with special reference to the effect of heat (pasteurization) on its physico-chemical, bacteriological, immunological, and nutritional changes. Missouri.

The effect of feeds, oils, and mineral salts upon milk secretion and milk constituents. Idaho.

The relation of body conformation to milk yield. Maine.

Cattle experiments: Relation of age to milk yield and butter fat percentage. Maine.

Physiological studies on the mechanism of milk secretion. Maine.

An investigation of physiological and chemical changes taking place within the mammary gland during secretion. Md.

Synthetic capacity of the mammary gland. Wis.

Milk secretion studies, using condemned tubercular cattle. The study of the source of milk solids. Vt.

Investigations into causes of variation in milk and fat production: Effect of individuality of cows upon milk and fat yields; influence of alimentary fat on the yield and composition of milk; investigations on the influence of alimentary carbohydrates on the yield and composition of milk; and effect of proteins from restricted sources on the yield and composition of milk. Iowa.

Milk secretion and production. (Cont.)

Analysis of milk records: To determine the age changes and the relation between total solids not fat and milk production per cent fat and butter fat; and to determine the reliance which may be placed in the different points used in the score card as a measure of milk production of the cow. Maine.

Relative utilization of energy in milk production and in fattening. Penn. Inst. Anim. Nutr.

Effect of diseases in the cow on milk. Mich.

The minimum protein requirement for milk production. Penn. Inst. Anim. Nutr.

Determination of the protein and energy requirements for milk production. Va.

The use of drugs as milk stimulants. Iowa.

Official testing and inspection.

Official testing of dairy cows. Missouri.

Official testing of dairy cows in the State. S. C.

Official testing for advanced registry or register of merit in the State of Idaho. Idaho.

Official dairy testing. Wash.

Advanced registry testing. Va.

Miscellaneous.

A study of methods of marking cows for identification. Idaho.

To demonstrate the relationship of dairy farming to the improvement of the soil. (Caldwell E. station) Idaho.

Food requirement for growing dairy cattle. Minn., Nebr.

The effect of temperature and humidity on the dairy cow. N. J.

Weight of dairy cattle as influenced by pregnancy, age, and methods of handling. Idaho.

DAIRY PRODUCTS

Bacteriology of dairy products.

Investigations in connection with raw and manufactured dairy products. Mich.

Dairy sanitation. Mich.

Bacteriology of dairy products. (Cont.)

Microbiological investigations in milk. Mass.

The bacterial content of milk from milking to cooling. S.C.

The determination of the bacterial content of milk by a rapid method (little plate method). Wis.

The American high acid organisms found in milk. Iowa.

Studies on the bacterial flavors and odors of milk. Iowa.

The enzymes of milk and their relation to abnormal flavors. Missouri.

Changes that take place in the quantitative bacterial count of morning milk. Minn.

The effect of preservatives on the bacteria in milk. Penn.

Studies of the compounds in milk and its products and their changes under the influence of certain classes of bacteria. N.Y. State.

The use of available chlorin as a germicide in milk and milk products. Ark.

Tubercle bacteria in milk and effect of pasteurization. Minn.

Bacteria responsible for slimy milk fermentation. Iowa.

Comparison of methylene blue reduction test and other tests for determining bacterial content of milk. Wis.

The important factors in the production of sanitary milk and the means and methods of milk examination. N.Y. State.

Bacteriological examinations of certified milk. Calif.

The bacteriology of butter. Okla.

A chemical and bacteriological study of the keeping qualities of butter. Ind.

A study of the types of organisms present and multiplying in cottage cheese. Idaho.

Flavor production in cheddar cheese. Wis.

Species of bacteria found in dairy utensils. N.Y. Cornell.

A study of the *Torula* forms responsible for the yeasty fermentation in cream. Iowa.

Butter and buttermaking.

Study of the chemistry of butter fat and the effect of food in modifying its chemical and physical character. Mass.

Keeping qualities of butter. Mich.

Factors influencing the keeping quality of butter. Minn.

Chemical and bacterial study of the keeping qualities of butter. To determine the action of specific bacteria upon milk proteins and a study of the cleavage products produced by the action of those organisms. Ind.

The effect of each of the normal constituents of butter upon its keeping qualities. Missouri.

Effect of pasteurizing temperature on quality and keeping quality (of butter). Iowa.

The effect of neutralization on the quality of butter. N.Y. Cornell.

Factors influencing grade of butter: To grade cream for butter making; effect of pasteurization for improving butter; temperature of churning at different seasons; methods of salting; uniform methods of manufacture. Okla.

Comparison of alkali, alcohol, rennet, and acid, temperature and other tests for ripeness of milk (a) for cheese making, (b) for butter making. Vt.

The bacteriology of butter. Okla.

The effect of peanut meal when fed to dairy cows on the qualities of the butter fat and methods by which this feed may be fed without undesirable effects. Ga.

Influence of acidity of cream on flavor and keeping qualities of resulting butter. Iowa.

A study of the chemistry and physico-chemistry of churning and the factors which influence churnability. Minn.

Butter oil as a substitute for sweet butter in manufacture of homogenized cream, ice cream, etc. Vt.

Factors involving butter shrinkage. Iowa.

Moisture contents of hard and soft butters. Vt.

Study of dairy plant records. N.Y. Cornell.

Creamery bookkeeping. Iowa.

Factors affecting the efficiency of hand separators and causes of variation in cream tests. Nebr.

Cheese and cheese making.

Studies in cheese making: Objects - effect of temperature of cooking on texture of cheese; effect of amount of rennet or pepsin on rapidity of curing cheese; the possibility of curing cheese in Oklahoma factories; controlling factors in proper handling and marketing of cheese in Oklahoma. Okla.

Yield of cheese from milk high and low in fat. Wis.

The effect of washing curd on the yield and quality of cheddar cheese. N. Y. Cornell.

The effect of clarifying milk for making cheddar cheese. N. Y. Cornell.

Pasteurization of milk for cheese making. N. Y. Cornell.

Factors concerned in the coagulation of milk by heat. Wis.

Relation of moisture and acidity to keeping quality of Neufchatel and cream cheeses. N. Y. Cornell.

The manufacture of a skim milk cheese that will keep. S. Dak.

The manufacture of Camambert, Swiss, and albumin cheeses. N. Y. Cornell.

Cheese making (cottage, Neufchatel, whey, Romano, etc.). A study of the practice of cheese making with special reference to the manufacture of foreign cheeses. Vt.

The use of Bacillus bulgaricus starter for controlling gassy milk in the manufacture of cheddar cheese. Calif.

A study of the types of organisms present and multiplying in cottage cheese. Idaho.

Butter fat substitutes to be used in milk and skim milk for cheese making. Iowa.

Comparison of alkali, alcohol, rennet, and acid; temperature and other tests for ripeness of milk (a) for cheese making, (b) for butter making. Vt.

Ice cream studies.

The effect of each ingredient in the manufacture of ice cream. Missouri.

The manufacture and chemical and bacterial study of ice cream. To determine the most suitable and unsuitable methods of manufacturing and storing ice cream and the effects of the methods of manufacture and storage upon the quality of the ice cream. Ind.

Studies in ice cream making. Effect of pasteurization of mixes on overrun and of pasteurization and emulsification on overrun, uniformity of overrun from pasteurized and emulsified mixes. Use of commercial ice cream powders, standardization of mixes for total solids. Bacterial counts on ice cream. Okla.

Ice cream studies. (Cont.)

Commercial ice cream making. Effect of pasteurizing and various processes in the manufacture, on the bacterial count. Okla.

Testing ice cream for butter fat. A comparison of various acids as to time required, ease of manipulation, character and accuracy of test; comparison of different ingredients upon character of test, such as sugar, gelatin, gum tragacanth, and ice cream powder, fruits, eggs and color material; influence of method of obtaining samples; time cream has been packed and manner of packing; comparison of results with cream and milk bottles; effect of emulsifying and homogenizing upon ease with which test may be made. Okla.

Factors affecting the formation of ice crystals in ice cream. N.Y. Cornell.

Butter oil as a substitute for sweet butter in manufacture of homogenized cream, ice cream, etc. Vt.

Milk composition, handling and marketing.

Factors influencing or affecting the chemical and physical properties of milk. Missouri.

Factors affecting the composition of milk. Factors influencing the percent and quantity of fat in the milk of cows on official test. Missouri.

A study of the composition of milk and fat, as affected by feeds; from different breeds of cows; and with reference to the natural quantitative relationship existing between the various constituents of milk. Ohio.

The effect of feeds, oils, and mineral salts upon milk secretion and milk constituents. Idaho.

The enzymes of milk and their relation to abnormal flavors. Missouri.

To find some practical means of eliminating the onion flavor from milk. N. C.

Studies on the bacterial flavors and odors of milk. Iowa.

Study of the compounds in milk and its products and their changes under the influence of certain classes of bacteria. N.Y. State.

The toxicity of milk. Iowa.

Acidity of fresh milk. N.Y. Cornell.

The pasteurization of milk in the final container; To study the efficiency of a commercial method of pasteurizing in the bottle and to study methods of cleaning, rinsing, and sterilizing bottles, and other steps in the process which might influence its efficiency. Okla.

Factors influencing vitamin content of milk. Minn.

Milk composition, handling, and marketing. (Cont.)

A study of methods which may be commercially possible for preparing milk fermented with pure cultures of Bacillus acidophilus to be used as a beverage or as a therapeutic agent. Conn. Storrs.

Study of the carbonic acid in milk as a basis for distinguishing heated from unheated milk. N.Y. State.

The important factors in the production of sanitary milk and the means and methods of milk examination. N.Y. State.

Insects injurious to market milk. To determine the importance of the various species concerned, to adapt already known measures and to discover better ones for any species that proves to be seriously injurious. N.J.

Study of city milk supply. N.Y. Cornell.

Studies of minor factors in market milk distribution. Mich.

Shipments of dairy products in New York State. N.Y. Cornell.

The marketing of dairy products in Oklahoma.--To ascertain general prices of butter fat, of milk and cream in all sections of the State at four periods of the year. The kind of market available; amount of butter fat milk or cream offered for sale at centers in all sections of the State, methods of marketing and form in which butter fat is marketed; frequency of marketing and the factors determining prices. Okla.

Methods of marketing milk in six representative Kansas towns. Kans.

Certified dairy inspections. Calif.

Study of dairy plant records. N.Y. Cornell.

AGROTECHNY.

Maple sugar and sirup.

Studies in cost of maple sirup production. Mich.

Studies relating to the results of tapping on trees and maple sugar yield to answer the question as to whether the single tree should be tapped in one or a number of places during the single season. Mich.

Study of fundamental processes relative to the storage of sugars and other carbohydrates in the wood and inner bark of the maple. Vt.

Miscellaneous.

Microbiological study of the deterioration of cane sugars. To determine the role played by bacteria and yeast in the fermentation of stored sugars and the conditions that influence this process. La.

Miscellaneous. (Cont.)

Microbiological study of losses in sucrose content in each successive stage of the manufacture of sugar. To determine the microorganisms active in each stage of the manufacture of sugar and their responsibility for the losses of sucrose content. La.

An investigation of the nature of decolorization, especially by vegetable decolorizing carbons, from a point of view of colloidal chemistry. Experiments on the refining of raw sugars and the manufacture of white sugar directly from cane juice by means of decolorizing carbons. La.

Study of possible modifications in the manufacturing process to prevent sugar deterioration. To develop methods in sugar manufacture to prevent the development of microorganisms responsible for losses in sucrose content. La.

Investigation on the sulphitation and other clarification processes. To study the effect of nonsugars, especially coloring matter occurring in the juice of sound cane or formed during the process of manufacture, on the yield and color of the products, and to devise methods for obtaining maximum yields of white sugar. La.

Study of phenol derivatives causing dark coloration of cane juices derived from eyes and tops of cane stalks; decomposition products of reducing sugars by alkaline clarification. La.

Study of coloring matters occurring in sound canes, or formed during the process of manufacture, and their effect on the color of the products. La.

The home manufacture of sirup from sugar beets. Oreg.

A comparison of the efficiency of different systems of vaporizing the heavier fuel used in oil tractors. Idaho.

VETERINARY MEDICINE.

Anthrax.

Anthrax. Oreg.

Anthrax: A study of general control measures with special attention to the bacterial diagnosis of the disease. La.

Cattle diseases. (See also specific diseases).

Cattle loin disease in the Coastal Plains of Texas. Tex.

Unknown disease of cattle in Fort Klamath district. Oreg.

An unidentified hemorrhagic disease in cattle. Nev.

Clover bloat or tympany of the rumen in cattle and its cure. Ky.

A study of red water in cattle. Wash.

Infectious diarrhea of cattle. La.

Cattle diseases. (Cont.)

Control of calf lung worm. W. Va.

A study of immunization of cattle against blackleg by using aggressins manufactured in the laboratory, also a study of immunity produced by using powder vaccine of double strength. Okla.

Diagnosis and eradication of Johne's disease. Wis.

Effect of diseases in the cow on milk. Mich.

Investigations of sterility of cows. Wis.

Contagious abortion. (See also Serum production.)

Contagious abortion. Colo., Conn. Storrs.

Investigations with contagious abortion. Missouri, Wyo.

Contagious abortion in cattle. Mich., Minn.

Infectious abortion caused by B. abortus (Bang). Oreg.

The study of infectious bovine abortion; causes; control. Vt.

Abortion diseases investigations. Studies of pathological lesions. Studies of blood tests and attempts to induce immunity. Kans.

Study and control of bovine abortion and complications in the college herd. Mass.

Field experiments with contagious abortion vaccine. Wis.

Investigations on contagious abortion and method of diagnosis. Wis.

Raising of contagious abortion free stock from infected parents. To determine degree of infection of calves born of infected mothers and method whereby they may be reared free of disease. Ark.

Contagious abortion of mares and pyemic arthritis of foals. Minn.

Transmissibility of bovine infectious abortion to swine. Ark.

Immunizing cattle against contagious abortion. To test vaccines prepared at the veterinary laboratory in cooperation with stock owners, with data and history of herd before and after treatment. Okla.

Immunization of heifers against contagious abortion by using abortion bacilli. Wis.

Immunizing horses and cattle against contagious abortion. Ky.

Treating for contagious abortion with methylene blue, carbolic acid and lugol solution. Ark.

Contagious abortion. (Cont.)

The preventative and curative properties of commercial anti-abortion vaccine, Ark.

Abortion observations, to determine if wheat product feeds tend to develop the abortion bacilli and if corn fed products foster the growth of antibodies. Md.

Hairlessness and goitre.

The cause and prevention of hairless pigs. Mont.

To determine the cause or causes of hairless litters; to learn whether particular breeds or families of swine are especially susceptible, to study the habits, degree of vigor, longevity, gestation period of hairless litters and the peculiarities of individual hairless pigs; to study the iodine treatment for hairlessness. N. Dak.

Goitre and associated conditions in domestic animals. Wash.

Influence of conditions of environment; high protein feeding and constipating diets on the development of hairless pigs. Wis.

The effect of iodine fed pregnant ewes upon size, vigor, bone, and condition of offspring. Iowa.

Hemorrhagic septicemia.

Hemorrhagic septicemia. Ky.

Hemorrhagic septicemia in cattle. Oreg.

A study of the pathogenicity as well as antigenic and biologic properties of the organisms belonging to the hemorrhagic septicemia group. Nebr.

Hog cholera. (See also Serum production).

Study of hog cholera and the use of serum. Mass.

Gross microscopical lesions of hog cholera. Minn.

Lesions characteristic of hog cholera in immune carcasses. Minn.

The isolation and cultivation of the specific microorganism of hog cholera and the investigation of methods of treatment based upon a vaccine. Ky.

A study of immunity in vaccinated hogs. Okla.

A systematic study of the fundamental facts underlying the development of hog cholera immunity and hyperimmunity. N. Dak.

An experimental study of hog cholera and the factors concerned in immunity against the disease. Missouri.

Hog cholera. (Cont.)

To determine the age at which pigs from immune mothers become susceptible to hog cholera. Md.

To obtain the percentage of double treated hogs that may later become susceptible to cholera; to find the proper age that pigs may be immunized by the double treatment, and length of time immunity of double treated pigs may be expected to last. Md.

Hog cholera exposure experiment, to determine the length of the period that a hog which has recovered from cholera, may act as a carrier of the disease and to determine the length of time that cholera virus may live outside of the hog's body and the relation of stable flies to the distribution of the disease. Ind.

Microscopical and cultural examination of hog cholera blood. To study the hog cholera virus and the relation of invading organisms to hog cholera. Ind.

Experiments on complement fixation in hog cholera. Missouri.

Experiments on the viability of hog cholera virus. Missouri.

Longevity of hog cholera virus. Minn.

A study of the vitality of hog cholera virus. Okla.

A record of the results of hog cholera immunization at the University Farm. Calif.

Horse diseases. (See also specific diseases).

Equine anemia. Nev.

Causes and transmission of infectious anemia. Mont.

Orchard horse disease. Wash.

Infectious disease of the respiratory system of horses. Oreg.

Swamp fever in horses. N. Dak.

Swamp fever or infectious anemia in horses and mules. Tex.

Transmission of swamp fever in horses. Wyo.

Contagious abortion of mares and pyelic arthritis of foals. Minn.

Immunity. (See also Serum production, and specific diseases).

Studies on the role of immunity- inheritance and transformation as a means of combating communicable diseases in animals. R. I.

Blood complement studies. Vt.

Necrobacillosis.

Investigations of necrobacillosis of pigs. Wis.

An enquiry into the nature of necrobacillosis in young pigs. Nebr.

Necrobacillosis- a study of the various activities of Bacillus necrophorus. Wyo.

Parasites. (See also sheep and poultry diseases, and Entomology, parasites-external)

The endoparasites of man and domesticated animals. Minn.

Animal parasites: The α -warble fly. Ohio.

To determine the general effect of ticks and tick treatments upon pure-bred, grade and native cattle. Guam.

Life history investigations of the short-nosed α -louse (Haematopinus eury-sternus Nitzsch. Tenn.

Insects and parasites affecting live stock, including the screw-worm and wool maggot, and the goat louse. Tex.

Arthropods injurious to poultry production. To determine the importance of the various species concerned, to adapt already known measures, and to discover better methods of controlling such species as seem to be worthy of attention. N.J.

Life history and control studies of pathogenic parasites of food animals. Mich.

To determine the extent of parasitic infestation among the domestic animals of Guam. Guam.

Testing a number of vermicides for efficiency in combating intestinal parasites. Ohio.

Life cycle of Moniezia expansa. Wyo.

Animal parasites. Gathering notes and specimens furnished by the station experiments, by post-slaughter examination of animal at the station or at packing plants, by correspondents or by field investigations. Ohio.

Poisoning and poisonous plants. (See also Botany and Chemistry).

Forage poisoning. Miss.

Forage poisoning of horses. Oreg.

Food poisoning in sheep and cattle. Colo.

Poisonous range plants. Nev.

Poison plants of our grazing ranges. Ariz.

To discover new facts relative to the cause and extent of forage poisoning and extend the present information by demonstrating the preventative and curative properties of Botulinus serum. Ind.

An attempt to ascertain the toxic effects of red buckeye (Adsculus pavia) when ingested by live stock. Ala.

Beet pulp and molasses poisoning. Utah.

Investigations on the toxicity of cottonseed meal to swine. N. C.

The toxicology of cottonseed and their products. The determination of the cause of the injury frequently resulting when cottonseed meal is fed to swine and the elimination of this cause of injury. N. C.

Poultry diseases. (See also specific diseases).

Chicken diseases. Colo.

Poultry vermin. Okla.

Etiology and pathology of fowl cholera. Methods for prevention and control. R. I.

Bacillary white diarrhea of poultry. Mass.

Methods of diagnosis of bacillary white diarrhea. Mass.

White diarrhea in chickens. Conn. Storrs.

Investigation of roup (Avian diptheria) and chicken pox (Epithelionia contagiosum). Calif.

Relation between adequacy of diet and immunity to roup. Kans.

Studies of pure culture bacterial vaccines for roup and fowl typhoid. Kans.

The proventricular and gizzard worms of fowls. Minn.

Eradication of gapes on the farm. W. Va.

To determine method of transmission of gape worms in poultry and find a remedy. Md.

Poultry diseases. (Cont.)

The gape worm of poultry. Ohio.

Round worms and tapeworms of poultry. Okla.

Studies of the life histories of the chick tapeworm (Choanotoenia infundibuliformis) and the chick nematode (Heterakis perspicillum). Kans.

The life history and methods of control of the chicken nematode Heterakus papillosa. Minn.

Embryology of cestodes. House flies as an agent in disseminating fowl tapeworm. Kans.

To discover the most satisfactory method of control of contagious epitheliosis. N.J.

To study the most successful methods of treatment of contagious epitheliosis. N.J.

To determine the cost of contagious epitheliosis outbreaks in its various forms. N.J.

To apply all information gained through a study of contagious epitheliosis into practical control of outbreaks in New Jersey. N.J.

The artificial propagation of chicken pox and the production and value of immunizing serum. Conn. Storrs.

To ascertain the true nature of the outbreaks of contagious epitheliosis of New Jersey. N.J.

Preparation and testing of a vaccine for the prevention of chicken pox and securing accurate data as to its protective properties. Ind.

Chicken pox immunity studies. Conn. Storrs.

Is diet an etiological factor in lumber neck in poultry. Minn.

Botulism in fowls. Oreg.

Poisonous effects of rose chafers. Conn. Storrs.

A study of the bacterial infection of eggs, with special reference to the bacteria of fowl cholera, fowl typhoid, and bacillary white diarrhea. R.I.

Green food v. antiseptics as a preventative of intestinal disorders of growing chicks. Ind.

A report of inquiries from poultry raisers of California in regard to outbreaks of disease among their flocks. Calif.

Study and control of poultry diseases in college and station flocks. Mass.

Elimination of disease in poultry. Mass.

Poultry diseases. (Cont.)

To study the poultry disease cases which occur and are brought to the attention of the Department of Poultry Husbandry through fowls dying on the State Poultry Farm at New Brunswick, at the Vineland International Egg Laying and Breeding Contest and fowls brought in by poultrymen. N.J.

A study of all diseased birds with reference to the location of the disease, types of disease, prevalence in districts and seasons, together with ante and post mortem conditions. N.J.

To study and make a classified tabulation of all poultry diseases found. N.J.

Blackhead disease of turkeys. R.I.

Study of blackhead in turkeys. Conn. Storrs.

Investigations of an infectious disease affecting and destroying large numbers of ducklings in the State, known as "keel" or staggers. Conn. Storrs.

Studies on entero-hepatitis of turkeys, to determine if the parasite is an ameba or a coccidia, and how to raise turkeys to avoid black head; diarrhea of adults, to determine causes and methods of combating these diseases; diarrhea of chicks; other apparently contagious diseases; parasitic diseases, parasites of the State and how to combat them; tumors, both malignant and benign; non-contagious diseases; histological studies; physiological studies; and anatomical studies. N.C.

Serum production, vaccines, and bacterins.

Serum production. Nebr.

Production and distribution of antihog cholera serum. Minn.

Hog cholera serum manufacture and distribution. Missouri.

Investigation of methods of manufacturing Dorset-Niles antihog cholera serum. To improve methods of producing antihog cholera serum; maintain such relation with cholera outbreaks and use of antihog cholera serum in the field as will enable to observe field conditions as they relate to hog cholera vaccination. Ind.

Curative properties of antihog cholera serum. To determine the stage of the disease at which vaccination is no longer of avail for cholera-infected hogs, and to determine whether antihog cholera serum has any positive curative properties. Ark.

To determine the actual cost of producing hog cholera serum. Ind.

Bureau of Animal Industry blackleg vaccine. Minn.

Hemorrhagic septicemia bacterin. Minn.

Sheep and goat diseases. (See also specific diseases).

Study of stomach worms of sheep. Conn. Storrs.

Lung worms of sheep. Okla.

Stomach worms in sheep and goats. Experiments with a view to ridding the animals entirely from the worms in such a manner as to involve the minimum amount of labor. Tex.

Stomach worms in sheep. Completion of life history- if other methods of infection besides the food-resistance of the embryos to weather conditions and their effect on the activity and length of the embryonic stage, methods of eradication and control. Okla.

Sheep losses in feed lots. Colo.

A study of swell head of sheep and goats. Tex.

Life cycle of Thysanosoma actinoides, a common tapeworm of sheep. Wyo.

Life history of Sarcocystis tenella, parasitic in the muscles of sheep. Wyo.

Effect of changing pastures on parasitic infestation of sheep. Ohio.

Swine diseases. (See also specific diseases).

Diseases of swine. Calif.

An enquiry into the nature of necrobacillosis in young pigs. Nebr.

To determine the nature of the disease affecting swine (so called mixed infection), particularly after vaccination with hog cholera. Okla.

Infectious swine diseases or "mixed infection". Study of causes, symptoms, post-mortem lesions, both macroscopical and microscopical, manner of transmission and control measures. La.

Identification of bacteria causing "mixed infections" diseases of swine and a study of their pathogenic properties. Ind.

Investigations on the action and dose of vermifuge remedies for the hog. Missouri.

Mineral mixtures and medications for wormy and unthrifty pigs. To determine effect of a mineral mixture and of national hay remedy upon the condition of pigs and rate of gain where above were fed. N. C.

A study of creatinuria in pigs. Wis.

Tuberculosis.

Transmission of tuberculosis in cattle and swine. Missouri.

Factors controlling the metabolism of bovine tuberculosis bacilli. Wash.

Tuberculosis. (Cont.)

The immunization of calves to tuberculosis. Calif.

Vaccination against tuberculosis. Wis.

Tuberculin tests. Minn.

Tuberculin testing of cows in certified dairies. Calif.

Tuberculosis in poultry. Mont.

The use of tuberculin in the diagnosis of tuberculosis in poultry under field conditions. Idaho.

Avian tuberculosis. Wis.

Action of physiological stimulants in avian tuberculosis. Minn.

Miscellaneous.

Studies of animal diseases. Mich.

Investigation of obscure diseases. Minn.

Death of animals and cases of serious sickness. (Davis) Calif.

Cause of ^{an}unnamed animal disease occurring in the Eastern Cascade Counties of Washington. Wash.

To determine the normal temperature of cattle, horses, and carabaos under Guam conditions. Guam.

Venerial form of ligament and leg ulceration. Its cause and control. Mont.

A study of the distribution, cause and control of the disease known as "trembles" or milk sickness, in farm animals. N.C.

Texas fever immunization work. Tex.

Laboratory and field diagnosis of animal diseases. Ky.

Control of liver fluke infestation through destruction of the snails which act as intermediate hosts. Oreg.

Vaginitis and balanitis. Oreg.

The lesions and pathology of hogs fed on velvet beans. Ala.

Investigations of miscellaneous diseases of animals. Calif.

Post mortem examinations, etc. Mass.

Studies of horse plague and miscellaneous diseases of farm animals. Kans.

To assist veterinarians and stockmen in diagnosing outbreaks of disease, and securing material for investigational work. Ind.

RURAL ENGINEERING.

Clearing land.

Methods of clearing logged-off hill and tide land. (Astoria Branch Station) Oreg.

Studies on time of brushing and seeding cut-over land. Wis.

Comparison of cost of stumping pine and hardwood stumps on various types of soil when dynamite is used alone; when large stumps are cracked with dynamite and then pulled with capstan puller; when large stumps are pulled first and then split with dynamite; when stumps are pulled with one man puller; when stumps are split and pulled with block and line. Wis.

Land clearing. General study of methods and results, and trials of a new stump burner. Oreg.

To determine the cost and most practical method of clearing land ready for cultivation. (Sandpoint Substation) Idaho.

Comparison of various strengths of dynamite for blasting pine and hardwood stumps on various types of soil. Wis.

Use of war salvage explosives in land clearing. Wis.

Drainage.

Drainage studies. (South Mississippi Branch Station) Miss.

Drainage systems. A study of different practices followed over the State and their effectiveness. Mont.

Drainage requirements of crops and drainage factors. Colo.

Drainage and reclamation of tide lands, especially investigations as to drainage systems. (Astoria Branch Station) Oreg.

Drainage and improvement of wet lands. Drainage of tide lands. Oreg.

Drainage of "grease wood lands" to remove alkali, and management to restore the structure of such lands. Oreg.

Study of water table and outflow on "white land" and effect of clover, lime, and manure on percolation. Oreg.

Settling of peat after drainage. Wis.

Preliminary drainage survey of Imperial Valley. Calif.

Bernalillo County Drainage District No. 1, includes 12,000 acres in Bernalillo Co. west of the Rio Grande at Albuquerque. N. Mex.

Bernalillo County Drainage District No. 2, 13,000 acres on the east side of the Rio Grande, north of Albuquerque. N. Mex.

Drainage. (Cont.)

Bernalillo County Drainage District No. 3, 6,000 acres running south of Albuquerque on the east side of the Rio Grande. N. Mex.

Valencia County Drainage District No. 1, 17,000 acres on the east side of the Rio Grande in Valencia Co. running along the river for about 15 miles south of the Indian lands. N. Mex.

Investigations of low cost methods and manufacture of concrete pipe for use in farm drainage and irrigation. Idaho.

Durability of concrete tile. Wis.

Miscellaneous drainage investigations in portions of State needing drainage. Calif.

Farm buildings and equipment.

Farm structures, including farm houses, general farm barns, cattle barns, dairy barns, horse barns, poultry houses, swine houses, sheep sheds, buildings for crop storage, granaries, corn cribs, potato storage houses, root cellars, milk houses, smoke houses, manure pits, machinery sheds, garages, and power plants. Iowa.

Cattle feeding barns and equipments. Iowa.

An investigation into the efficiency of various barn ventilating systems. Iowa.

Comparison of efficiency of King and Rutherford systems of ventilation. Wis.

Equipment for live stock feeding and management: Feed bunks, alfalfa racks, mixing box, dipping tank, combination sheep rack, and other miscellaneous equipment; self feeders for swine, specifications and construction; small farm elevators for live stock farms, specifications and construction; beef cattle barn- Iowa State College, specifications and construction. Iowa.

Plans for sales pavilions and barns. Iowa.

Silo construction. Iowa.

Capacities of silos. Mich.

Deterioration of concrete silos due to the corrosive influence of silage acids and means of prevention. Iowa.

Silage investigations, to study all conditions regarding the use of silo, including material of wall, moisture content, shock corn, fodder, loss of nutrients in silo, silage from legumes, capacity of silos of different depths. Missouri.

To determine the practical value of the silo under Guayaquil conditions. Guayaquil.

Housing pure-bred poultry. Ky.

Farm machinery.

Experimental methods and machinery. Iowa.

Tractor efficiency Iowa.

Tractor farming. Study of results obtained and relative cost. Mont.

Economic study of farm tractors on several farms. Mont.

An economic study of farm tractors in New York. N.Y. Cornell.

The status of the farm tractor: To study the economic results of the farm tractor as operated under average Indiana conditions, from the viewpoint of saving man and horse power on the farm; increase or decrease of yields and reasons for same, effect of tractor wheels on different types of soil, effect of running wheels on the land compared to the practice of running the wheel in the furrow, results obtained from burning different kinds of fuel, experience with the different brands of motor oils, expedience with which work is done, other services than plowing rendered by the tractor, problem of securing competent operators, certainty of operation of tractor, upkeep expense, limit of size of farm where power farming is profitable, most favored size, wheel tractor v. caterpillar, general estimate of the value of the tractor as a part of the farm equipment, adaptability of tractors on Indiana farms. Ind.

Tractor and other farm equipment costs on the farm. Missouri.

Miscellaneous tests of tractors and farm machinery. Calif.

Implement draft. N.Y. Cornell.

Testing of farm implements. Nebr.

Draft of farm implements, farm power. Tests with the dynamometer. Mont.

Power required for plowing. Calif.

Plow draft investigations. Nebr.

The influence of speed upon the draft of plows. Iowa.

Investigations to determine the draft of various farm implements and the cost of different operations with them. To determine the draft of various tillage and other farm implements, the effect of different soil types on draft and the effect of the different treatments of soils on the draft of various implements. Also to determine the cost of different operations. Missouri.

The determination of the slippage of various types of wheel equipment. Ind.

Studies of labor-saving machines. Ensilage harvesters, corn picker huskers, small threshers, small ensilage cutters, grain shockers, shock movers, and silage packers. Iowa.

Corn picker huskers. Iowa.

Farm water supply, sewage disposal, and sanitation.

Design and installation of farm water supply systems. Idaho.

To determine the suitability of the waters of North Dakota for drinking and mechanical purposes. N. Dak.

An investigation of sanitary conditions on farms and experiments to determine the best types of sanitary equipment. To determine the actual sanitary conditions as they exist on typical farms, and the economy and efficiency of different kinds of sanitary equipment. Missouri.

Sewage disposal on the farm, by the septic tank method. Mont.

Engineering problems in the disposal of creamery sewage wastes. N. Y. Cornell.

Investigation of the biology of sewage disposal. To find out how sewage may be disposed of with a reduced amount of water and end-product containing the waste materials in a commercial form. N. J.

Methods of sub-surface irrigation for domestic sewage. N. Y. Cornell.

Irrigation.

Investigation of the practicability of irrigating certain comparatively level portions of farms in the semi-arid regions. Idaho.

To determine the best methods of irrigating these soils. (Sandpoint Substation) Idaho.

To determine the feasibility of irrigation as compared with nonirrigation. (Sandpoint Substation) Idaho.

Surveys of proposed irrigation and proposed drainage projects to determine their feasibility agriculturally. Oreg.

Experiments in distribution of water and improvement of irrigation practices. Corrugation method, kind of soil, preparation, and head. Oreg.

Underflow studies. Ariz.

An investigation of the valleys of the State and to map the same to show where artesian water is available for irrigation and for culinary purposes. The pressure of the water, the flow of the wells and the nature of the supply reservoir is studied for all the artesian well districts of the State. Utah.

Rate and cause of rise of ground water in the Mesilla Valley, New Mexico. N. Mex.

Ground water studies in the Socorro Valley, New Mexico. To determine the cause of the rise of the ground water, rate of rise, and approximate damage done. N. Mex.

General irrigation investigations in California including office routine. Calif.

Pump irrigation: Cost, and acreage that can be irrigated. Nebr.

Irrigation. (Cont.)

- Cost of pumping irrigation water. Mont.
- An investigation of irrigation pumping machinery. Ariz.
- Pumping for irrigation. Investigations at Malone, Lund, Bloomington, and Cedar City. Utah.
- Pumping water for irrigation. Investigations at Cedar City Farm. Utah.
- Experiments in the distribution of water and improvement of irrigation practices. Strip border method. Kind of soil, width and length of borders, preparation, head. Oreg.
- Amount of water to apply. (Size of irrigation) Utah.
- Duty of water in rice irrigation in California. Calif.
- Investigations on the duty of water in plant growth. Idaho.
- Sevier County Farm irrigation experiments, conducted with sugar beets, potatoes, and alfalfa to determine the duty of water in the Sevier Valley and to determine the best methods of applying it. Utah.
- Irrigation practice at Greenville with beans, potatoes, oats, and alfalfa. Utah.
- Irrigation of vineyards. (Davis) Calif.
- Vegetable irrigation at Davis. Calif.
- Irrigation investigations with field crops. Demonstration of measuring devices. (Davis) Calif.
- Study of relations of soil water and crop in respect to irrigation and dry farming supplemented by irrigation. N. Mex.
- Investigations to determine best length and width of borders for "border irrigation". (Hermiston Branch Station) Oreg.
- Seepage in the Gallatin Valley. Study of underground water levels. Mont.
- Studies as to duty of water for different soils and crops on the main irrigated sections of Oregon. Oreg.
- Duty of water for major crops with varying depths of applications and applications at different intervals. (Hermiston Branch Station) Oreg.
- Effect of irrigation at different times on the maturing of the crop. Mont.
- Irrigation: Especially for the growing of silage corn, potatoes, and new alfalfa. (North Platte Substation) Nebr.
- Amount of irrigation water for best results with wheat, oats, barley, peas, alfalfa, sunflowers, and other less important crops. (Burns Branch Station) Oreg.

Irrigation. (Cont.)

To find the most profitable crops to be grown under irrigation. (Sandpoint Substation) Idaho.

Alkali and plant food under irrigation and drainage conditions. N. Mex.

Irrigation investigations with field crops. (Davis) Calif.

Study of conditions affecting operation and accuracy of types of current meters for determining water velocity in open channels. Colo.

Venturi flume. Colo.

Measuring devices of irrigation- different kinds of weirs. Mont.

Evaporation experiments. Colo.

Survey of composition of irrigation waters. Utah.

Irrigation institutions. Utah.

Materials of construction.

Comparison of fence posts. Minn.

Fence post treatment. Mont.

Preservative treatment of fence posts. Minn.

Preservative treatment of fence posts and shingles. Iowa.

Effect of structure, time of cutting, and methods of seasoning of white cedar on the penetration of preservatives. Minn.

Roofing materials. Iowa.

Service tests on oils. Iowa.

To determine the species of fungi growing on painted surfaces, the environmental facts, the injurious effects, the relationship of fungi to paints of different composition and preventative measures. N.J.

Alkali proofing and preparation of alkali proof cements. Wyo.

Durability of concrete tile. Wis.

Investigations of low cost methods and manufacture of concrete pipe for use in farm drainage and irrigation. Idaho.

Manufacture of concrete irrigation pipes. Calif.

Miscellaneous.

Road materials of Colorado. Colo.

RURAL ECONOMICS.

- Cost of production and accounting. (See also Animal husbandry, cattle, swine, horses, poultry, and Dairy)
- Cost of production. Wash., W. Va.
- Complete cost accounts. N.J.
- Cost of production studies. Oreg.
- Cost of producing farm products. Minn.
- Cost of producing farm products. N.Y. Cornell.
- Prices of farm products. N.Y. Cornell.
- Farm cost accounting. Missouri.
- Farm cost accounting, in cooperation with several farmers. Mont.
- Cost studies in farm management. Vt.
- Farm organization and cost of production. Statistical route studies. Kans.
- Investigation of farm organization, including cost of production studies in irrigated sections of southern Idaho. Idaho.
- Investigation of farm organization, including cost of production studies in northern Idaho. Idaho.
- Cost of producing farm products under farm conditions. Missouri.
- Cost accounting on Wisconsin farms. The cost of milk production. Wis.
- A study of labor requirements and production costs of farm crops and live stock in representative areas in Kentucky. Ky.
- Investigations into the financial side of farming as applied to the production of fruit, field, cereal and other crops of a similar nature. Calif.
- To determine the cost of certain crops from the standpoint of man and horse labor expended. (Caldwell Substation) Idaho.
- Hay prices- coordination of factors of price, market arrivals, yields, and acreage. N.Y. Cornell.
- Study of cotton farm organization and cost of production of cotton. Tex.
- To determine the cost of producing wheat in different parts of North Dakota. N. Dak.
- Survey on the cost of producing wheat and oats. Iowa.
- Cost of producing fruits. Minn.
- A study of cost accounting for citrus orchards with a view to determining as far as possible the actual value of cultural practices. Calif.

Cost of production and accounting. (Cont.)

- To find the cost of producing citrus fruits in Porto Rico. P.R.
- Cost of maintaining a beef breeding herd. Ohio.
- Cost of production of pure-bred beef cattle. Ark.
- Cost of raising pure-bred cattle. Complete records on the fitting of 10 yearling bulls and 7 senior calves. Oreg.
- Cost of fattening cattle and the relation of the enterprise to the farm business. Nebr.
- Survey of the cost of beef production. Iowa.
- The cost of horse power, including feed, shoeing, harness depreciation and repair, bedding and labor for feeding and care. Oreg.
- Cost of raising colts from brood mares used for farm work. Ohio.
- To learn cost including feed and labor, to raise pigs to weaning time or ten weeks old. N.C.
- The influence of different systems of management upon the cost of producing pork. Missouri.
- To measure the factors of cost in raising and fattening hogs, including cost factors of growing gilts, of the gestation period and of the suckling period. Ill.
- To determine the cost of production of mature pullets. Mont.
- To determine the cost of egg production under North Dakota conditions. N.Dak.
- The cost of producing milk. Conn. Storrs.
- Cost of milk production in Nebraska. Nebr.
- Cost accounting, to determine the economic factors underlying successful dairying and to secure accurate data on the cost of milk production. Ill.
- Record of the station herd, to ascertain the food cost of milk production, the cost of butter fat and the dry and digestible matter required to produce a definite amount of milk and butter fat. Mass.
- Cost of production of milk and butter fat. Ark.
- To secure records of production of registered dairy cows in Oklahoma; to secure feed records and methods of feeding dairy cows when under official test; to determine the cost of feeding test cows in Oklahoma. To determine cost of production of milk in tests of advanced registry; the advantages of advanced registry to owners or breeders of dairy cows. Okla.
- To determine the cost of producing milk in terms of the different kinds of feed consumed and the amount of labor required for each of the different operations of the dairy. N.C.

Cost of production and accounting. (Cont.)

To determine the cost of raising dairy heifers without pasture, to maturity -
(1) to age of six months. (2) to calving time. N. Mex.

Cost of raising dairy stock. Ark.

Cost of growing dairy cows. Iowa.

The cost of raising dairy heifers. Ohio.

Cost of milk from forced y. averaged dairy condition cows. To determine the
cost of getting cows on the advanced register of their respective breeds. Md.

Procuring data relative to the cost of producing market milk. Mich.

Cost of growing crops for canning factories. N.Y. Cornell.

A canning crops survey with reference to production cost and cultural methods.
N.Y. Cornell.

Cost of production studies. Surveys of canhouse tomatoes. N.J.

Farm labor.

A study of labor on farms. N.Y. Cornell.

Utilization of labor on the farm. Missouri.

Distribution of farm labor. Missouri.

Wages and seasons of employment of farm laborers in Minnesota as determined
by the sample data methods, and by the estimate method of investigation.
Minn.

Continuation survey of labor income. To study agricultural changes and vari-
ations occurring during a period of 5 years. W. Va.

Farm organization and management.

Farm organization. Utah, Wash.

Applied farm organization. Plans prepared and installed for 40 farms. Oreg.

General plans of farm organization and operation in different sections of the
State. Missouri.

Investigation of farm organization, including cost of production studies, in
irrigated sections of southern Idaho. Idaho.

Investigation of farm organization, including cost of production studies in
northern Idaho. Idaho.

Farm organization and cost of production. Statistical route studies. Kans.

Farm organization and management. (Cont.)

To find out the scope and extent of organizations among farmers, methods of doing business, their profitableness, and their strong and weak points. Ind.

Types of farming. Utah.

A test of grain v. live stock farming. Ohio.

A comparison of a live stock system with a grain system of farming. S. Dak.

Study of cotton farm organization and cost of production of cotton. Tex.

An agricultural survey: To obtain a knowledge of the farm management practice followed in a typical blue grass area where agriculture is the leading industry; to determine the important factors which influence the profitableness of farming in this region; to suggest ways of improving the organization and management of the less successful farms of the region; and to compare the relative merits of a one-year survey with one taken two consecutive years. W. Va.

Farm management: To place the unused portion of the farm in condition to produce crops for feed or sale. (Caldwell Substation) Idaho.

To work out methods of studying regional farm management problems and discover the fundamental principles and their application to agriculture. Okla.

Planning the Iowa farmstead: To bring together reliable data concerning conditions on the Iowa farmstead that must be considered when planning them for efficiency and beauty and also to formulate some principles and rules applicable to Iowa conditions. Iowa.

Notes on the management of the Thompson farm. Penn.

Miscellaneous farm management studies. Utah.

Study of Indian agriculture. Ariz.

A survey of cooperation in Douglas County, Minn. Minn.

A study of dairying on 166 farms in Herkimer County, N.Y. N.Y. Cornell.

Agricultural surveys of Tompkins, Livingston, and Jefferson Counties. N.Y. Cornell.

Record of farm operations (Mitchell Farms) (College Farm) Penn.

Economic study of farming in a representative community in the East Tennessee Valley. Tenn.

Farm organization. Records on about 500 farms. Oreg.

A determination of the efficiency obtained in the operation of Iowa cooperative creameries. Iowa.

Land settlement.

Methods employed by private agencies in land settlement. Minn.

Study of the progress of settlers in cut-over districts of Wisconsin. Wis.

Land tenure.

Farm tenancy. To determine costs, investments, labor income, etc. Nebr.

Survey of 500 tenant farms in Franklin, Butler, Hardin, and Grady counties. Iowa.

Farm ownership in the State as represented by 1,000 farms selected from all parts of the State. Mass.

Land tenure in Missouri. Missouri.

A study of farm tenancy in Tennessee. Tenn.

Study of farm leases in Wisconsin. Wis.

Land values.

Relation of various economic factors to farm values and to the contentment of the farmer. Tenn.

Agricultural possibilities of logged-off lands. Idaho.

Iowa land value studies. Iowa.

Methods of land valuation with special reference to Minnesota. Minn.

The agricultural and market value of Missouri farm lands. Missouri.

Marketing.

Marketing farm products. Iowa.

Marketing business practice. Minn.

Cooperative marketing investigations. Tex.

Study of the retail distribution of food. Wis.

Study of consumers' cooperative associations. Mass.

Business organization and management of cooperative marketing associations. Minn.

Study of the balance of trade in food products, covering the towns of Hampshire County and several towns and cities of Hampden County. Mass.

Marketing. (Cont.)

The collection and analyses of statistics concerning farmers cooperative organizations in Minnesota. Minn.

Marketing of Wisconsin farm products. Wis.

Cooperative organizations (with special reference to grain elevators and live stock shipping associations). Iowa.

Hemp marketing investigations. Ky.

The economics side of storing and marketing sweet potatoes. Tex.

Methods and costs of distribution of tobacco, onions, and potatoes. Mass.

Apple market investigations. Mass.

Cooperative seed production and distribution. Minn.

Studies of the marketing of condensed milk and canned peas. Wis.

Economics and the milk situation. N.Y. Cornell.

Rural credit.

Study of farm credit in Wisconsin. Wis.

Rural sociology.

The movement of farm population. N.Y. Cornell.

The standard of living on the farm as a factor in cost of production. Missouri.

Cost of family living on the Missouri farm. Missouri.

Rural school finance. N.Y. Cornell.

Inequalities of school support in Iowa. N.Y. Cornell.

Building scales for rural schools. N.Y. Cornell.

A social and economic study of a neighborhood. W. Va.

A study of the social relations of the rural schools in Tompkins County. N.Y. Cornell.

A rural school survey of the State of New York. N.Y. Cornell.

The rural churches of Tompkins County. N.Y. Cornell.

A study of the Sherwood community. N.Y. Cornell.

Study of agricultural insurance in Massachusetts. Mass.

Use of psychological tests as a basis of admission to college and of educational guidance. N.Y. Cornell.

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